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ABSTRACT

Thirteen institutionalized children from 4-1/2 to 14 years old, diagnosed as autistic, atypical, or childhood schizophrenic, were observed for three years to obtain a detailed description of their speech and language behavior. Case histories were assembled from available medical and psychological data. During a program of experimental relationship therapy, controlled observations were conducted to evaluate each child's linguistic functioning. Although case studies constitute the main contribution of the research, additional findings were as follows: there was a high incidence of first born males of Jewish parents of relatively high socioeconomic status; severe family disorganization had occured in seven of the 12 families; prior to residential placement the children had a wide range of diagnoses; many atypical medical signs were present in the children's birth histories and later diagnoses; there was a significant correspondence between reports of their behavior during the study and reports made previously by other case workers; the majority of the children exhibited indifference, unresponsiveness, minimal or no speech, stereotyped or ritualistic behaviors, hyperactive behavior, and eating and sleeping problems. Observations of speech and language suggested central nervous system dysfunction and the language deficits persisted despite the relationship therapy. (JB)

The
SPEECH BEHAVIOR and LANGUAGE COMPREHENSION
of
AUTISTIC CHILDREN

A Report of Research

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CHAPTER I

INTRODUCTION

An outstanding manifestation of the childhood mental disorder, early infantile autism, first described by Kanner,[1] is the severe reduction or absence of effective communicative behavior. Because of the rarity of this unusual syndrome and because children identified as autistic manifest the most baffling speech and vocal behavior, speech pathologists are becoming increasingly interested in studying this problem.

In 1959, Pronovost[2] undertook a pilot study of the speech behavior and language comprehension of a group of children thought to be autistic who were in residence at the Parents' School for Atypical Children, Massachusetts. The School has been described by May and May.[3] Both Pronovost's study and a Master's thesis by Richmond[1] demonstrated the feasibility of describing the speech behavior and language comprehension and the possibility of speech/language therapy with these children.

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[1] Leo Kanner, "Autistic Disturbances of Affective Contact," The Nervous Child, II (1943), 217-250.

[2] Wilbert Pronovost, "The Speech Behavior and Language Comprehension of Autistic Children," Journal of Chronic Diseases, XIII (March, 1961), 228-233.

[3] Jacques M. May and Marie-Anne May, "The Treatment and Education of the Atypical, Autistic Child in a Residential School Situation," Journal of Mental Deficiency, LXIV (November, 1959), 435-443.

Purpose

This investigation was a descriptive study of the speech behavior and language comprehension of thirteen institutionalized children, from four years and six months to thirteen years and ten months of age, diagnosed as autistic, atypical, and/or childhood schizophrenic.

Scope

This study reported a three year investigation to describe in detail the speech behavior and language comprehension of thirteen children who presented an extraordinary deficit in communication and in the capacity to relate to others. The major data have been presented in exhaustive case studies including all available medical and psychological information, an account of ten months of pretherapy observations of the children within their various activity settings, an analysis of the institution's records of the children, and a report of observations made during six months of experimental therapy. Also, an analysis of group trends has been made.

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[1] Cynthia Richmond, "An Exploratory Study of the Speech of Ten Autistic Children" (unpublished Master's thesis, School of Education, Boston University, 1958).

Throughout the study extensive use of tape recordings was made to obtain a more complete record of the speech and nonverbal vocalizations of each child.

Justification

Since 1943 when Leo Kanner first described the unusual behavior of eleven children in his classic paper, "Autistic Disturbances of Affective Contact,"[1] widespread professional interest has ensued.

While a voluminous literature has developed about what Kanner delineated as the syndrome of early infantile autism, there has continued to be marked uncertainty concerning its specificity clinically and diagnostically. Controversy surrounds its etiology, ranging from exclusively organic explanations to completely psychogenic hypotheses. Consensus has not been reached with regard to the relationship or differentiation of infantile autism and childhood schizophrenia. Kanner has explained part of the reason for the limited advance in understanding the unique behavioral phenomena represented in infantile autism as follows:

> The concept of "early infantile autism" (I could not think of a better name) was diluted by some to deprive it of its specificity, so that the

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[1] _Loc. cit._

> term was used as a pseudodiagnostic wastebasket for a variety of unrelated conditions, and a nothing-but psychodynamic etiology was decreed by some as the only valid explanation, so that further curiosity was stifled or even scorned.[1]

The nosological confusion in the psychiatric literature unfortunately continues to be chaotic which has been reflected in the hodgepodge of descriptive and diagnostic terms used, such as: pseudo-retardation, atypical, symbiotic psychosis, autistic/schizophrenic, arrested development due to emotional factors, infantile psychosis, psychosis of early childhood, and autistic disturbance.

In Bernard Rimland's unparallelled work, Infantile Autism,[2] he has indicated that, apart from Kanner's writings, comprehensive descriptions of the disorder are sorely needed to develop normative data. For this reason and because of the rarity of the disorder, it was hoped that the careful compilation of detailed descriptions of the thirteen children in this study would contribute to the satisfaction of this need. In addition, refined observations and analyses of the speech behavior and language comprehension in autism are also needed, not only because they constitute an outstandingly unique feature of the disorder, but because they can provide crucial data for differential diagnosis.

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[1] Leo Kanner, "Forward," in Bernard Rimland's Infantile Autism (New York: Appleton-Century-Crofts, 1964), v.

[2] (New York: Appleton-Century-Crofts, 1964), p. 18.

As delineated by Kanner, the syndrome of early infantile autism prominently includes disordered communication, which recently has engendered the interest of speech pathologists. The lack of speech in autistic children has been termed voluntary or elective mutism, suggesting that an intimate relationship exists between the child's refusal to speak and the primary symptoms of a self-imposed isolation. Although the literature indicates that approximately half of the known autistic children use no speech whatsoever, those who produce words do not usually use them as a means of communication. These speaking children have been reported in several of Kanner's writings in which he has elaborated on speech peculiarities including the metaphorical use of language, delayed echolalia, reversals of pronouns, extreme literalness, part-whole confusions, and affirmation by repetition.[1,2] Because of the profound nature of the communication disturbance, the presence of an auditory disorder has frequently been the first question raised by the child's parents. Retardation and/or some

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[1] Leo Kanner, "Irrelevant and Metaphorical Language in Early Infantile Autism," American Journal of Psychiatry, CIII (September, 1946), 242-246.

[2] Leo Kanner, "The Conception of Wholes and Parts in Early Infantile Autism," American Journal of Psychiatry, CVIII (1951), 23-26.

form of organic impairment have also been among the first impressions in many diagnoses. However, a predominently psychogenic explanation of these phenomena has prevailed. Eisenberg and Kanner have stated that retardation, hearing loss, or other crude, recognizable, physical pathologies appear to be absent in actual autism, as far as can be determined by standard neurological examination and careful psychological examination.[1]

Psychiatric and psychoanalytical investigations of infantile autism have reported that psychotherapy has been beneficial with some improvement noted in individual cases. There has been no evidence that the course of autism has been significantly altered by any of the traditional techniques.[2] As reports of client-centered psychotherapy have been noticeably absent from the literature, it was felt that a program of relationship therapy, based on client-centered principles, should be instituted as a unique approach towards effecting behavioral changes, particularly in the area of speech and language.

The need for research in autism has been expressed by Rimland:

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[1] Leon Eisenberg and Leo Kanner, "Early Infantile Autism," American Journal of Orthopsychiatry, XXVI (1956), 556-564.

[2] Rimland, op. cit., p. 137.

> Inasmuch as infantile autism is clearly a source of unhappiness to children afflicted, to their families, and to the community at large, there can be no doubt that research on infantile autism is necessary and important in itself.[1]

Further, he has argued strongly for broad, but intensive, studies involving the entire scientific community.

> One of these reasons is that the extraordinary specificity and consistency of the symptoms of autism give rise to new hypotheses concerning the mode of function of the normal brain. . . . A second reason resides in the fact that while autism itself is an exceedingly rare disease it is one of the few separate diseases which can be isolated for study in the massive conglomeration of conditions which contribute to mental retardation.
>
> Autism tends strongly to occur under conditions which also predispose toward other forms of mental retardation. But unlike most other forms of retardation, autism tends strongly to occur without complicating health problems or physical symptoms. The generally favorable family background of autistic children helps rule out the possibility of difficult to cope with familial deficiency. Thus, the study of autism may shed much needed light on some of the biological bases of intelligence and on conditions predisposing to exogenous retardation. It is possible that autism may be used as a fine-edged tool--an opening wedge--in the general scientific attack on the problems of abnormal mentality.[2]

Rimland has concurred with the suggestion made by Sarason and Gladwin when they wrote of autism, saying:

> The importance of these cases to the development of a science of psychology would seem to be vastly beyond what their relatively rare occurrence in the general population would suggest.[3]

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[1] Ibid., p. 138.

[2] Ibid., p. 139.

[3] Seymour Sarason and Thomas Gladwin, "Psychological and Cultural Problems in Mental Subnormality," in Mental Subnormality (New York: Basic Books, Inc., 1958), II, p. 345.

The Setting for Research

At the time of this study, the Parents' School for Atypical Children, hereafter referred to as Seaview, was a residential facility providing year-round care for exceptional children who were thought to be mainly autistic by referring psychiatrists and who could not be managed in their own homes because of their aberrant behavior.

The physical facility consisted of two buildings set on a hillside, affording a panoramic view of the ocean. One of the structures was formerly a large, private home typical of the estate type summer house common to beach resort areas at the turn of the century. The other was a house of contemporary design, built to provide additional living and sleeping areas while attempting to maintain a homelike atmosphere. With few exceptions, all of the rooms regularly used by the children in both buildings were devoid of non-essential furniture and decoration. Only simple ruggedly-built furniture could be maintained. Every window had protective wire screening and all doors had some type of lock or hook. A large, common dining room in the older building was used by most of the children except for those who had to be fed separately. With the exception of two of the children who had private bedrooms, the remainder of the group slept in rooms with one or two others.

Throughout the course of the study, the mother of two of the children in residence directed Seaview's administrative functions with the aid of one full-time assistant and a part-time registered nurse. Their principal roles were the supervision of the kitchen and dining room, dispensing the children's medications, coordinating the daily activities, scheduling the personnel, substituting in all roles when unscheduled absenteeism occurred, and meeting the daily crises of special problems with individual children. Staff meetings were held every few months to discuss the exigencies arising in the daily care of the children.

A consulting psychiatrist visited twice monthly to prescribe drugs and medications and to provide counsel to the administrator and staff. In an emergency or in the event of illness, the children's medical needs were tended to by physicians in the community.

During the daytime, the children were cared for in small groups by female attendants who had been recruited from the community. Numerous part-time and temporary personnel were employed to maintain the twenty-four hour, seven day a week, year-round coverage. On weekdays, selected children were seen by an educational therapist who attempted to introduce the child to fundamental tasks which would facilitate learning of preschool or primary grade materials. From time to time, two women were employed to provide individual and small group activity sessions for selected children. One woman, a trained nursery school teacher, focused her efforts on introducing the child to various preschool materials and activities such as puzzles, stringing beads, etc. The other had some training in music and provided musical stimuli via the piano, records, and rhythm band instruments.

Generally, the children's contacts with one another were minimal. In the play yard, at mealtimes, during holiday parties, and at firesides they were exposed to one another but rarely interacted, remaining for the most part solitary and withdrawn.

Apart from the staff's intermittent efforts to provide structured group activities such as nursery school musical games, the children remained within their regularly assigned "play" groups under the supervision of their attendant for the major part of each day. Most of the group did not leave the confines of the institution for extended periods of time, and seldom were exposed to anyone other than institutional personnel. Upon the recommendation of administration, the maximum contact the children were permitted with their parents was once every six weeks. The administration also made every effort to minimize the number of visitors.

There were occasions which afforded some children a change from the environment of the institution.

Certain children were regularly provided with walks or automobile rides. There were summertime trips to the beach and odd occasions when visiting parents took their child out. A few children made visits to their homes, but rarely.

CHAPTER II

REVIEW OF THE LITERATURE

It is the primary purpose of this review to acquaint the reader with the phenomenologic uniqueness of early infantile autism, one of the psychopathologies of childhood.

More than twenty years have passed since Kanner reported his initial observations outlining the necessary conditions for making the diagnosis of early infantile autism. He emphasized that the disturbance is present from the very beginning of life, that the child's capacity for human relatedness is profoundly affected by a self-imposed isolation, and he noted evidence of an inordinate need to maintain order and sameness in the environment. Kanner also mentioned skills in handling and an intense interest in objects rather than persons; a marked intelligence; attractive physiognomies; preserved areas of intellectual performance in the face of an extremely subnormal level of general mental functioning; and extraordinary speech/language disturbances.[1]

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[1] "Autistic Disturbances of Affective Contact," pp. 217-250.

In more than two decades, fewer than two hundred cases have been positively identified.[1] Of these, one hundred and fifty have been reported by Kanner.[2] Despite this low incidence, autism in children has stimulated an outpouring of articles in diverse professional journals and chapters in numerous texts serving psychiatry, social work, education, and psychology. Two national magazines have offered reports dealing with the subject.[3,4] The volume of material available to students of the problem reached such proportions in the last decade that it became increasingly difficult to discriminate Kanner's infantile autism from the host of diagnostic designations affixed to children with behavior disorders.

Infantile autism has been commonly grouped with the broader designation of childhood schizophrenia. Kanner, himself, has stated,". . . it is not altogether contrary to the present day ideas about childhood schizophrenia to include infantile autism in its scope."[5] Goldfarb and Dorsen have included autism in their

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[1] Rimland, op. cit., p. 18.

[2] Leo Kanner, Child Psychiatry (3rd ed.; Springfield, Illinois: Charles C. Thomas, 1957), p. 739.

[3] Rosalind C. Oppenheim, "They Said Our Child Was Hopeless," Saturday Evening Post, June 17, 1961, pp. 56-58.

[4] N. G. Stuart, "Scream in the Night," Ladies Home Journal, September, 1960, pp. 163-172.

[5] Leo Kanner, "The Specificity of Early Infantile Autism," Rev. Psychiatrie Infantile, XXV (1958), 108-113.

Annotated Bibliography of Childhood Schizophrenia and Related Disorders (as reported in the English Language through 1954).[1] Similarly Ekstein, Bryant, and Friedman have discussed infantile autism as a related disorder in their major review of childhood schizophrenia, which they view as the broadest possible diagnostic entity.[2] They have drawn together all the existing literature on the psychoses of early childhood through 1956, pointing out the occurrence of a tenfold increase in publications for the preceding decade. Their bibliography contained five hundred and fifteen references of which the preponderance (three hundred and twenty-five) dealt with etiology, symptomatology, and diagnosis. They have indicated that the proliferation of labels used in the diagnostic process has been directly related to the choice of treatment which, in turn, has been based on the individual worker's rationale explaining the patient's personality organization. They also purported that treatment philosophies have been reflected indirectly in the numerous etiological hypotheses which remain vague, confused, and riddled with ideological bias.

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[1] William Goldfarb and Marilyn M. Dorsen, (New York: Basic Books, Inc., 1956).

[2] Rudolph Ekstein, Keith Bryant, and Seymour W. Friedman, "Childhood Schizophrenia and Allied Conditions," Schizophrenia, ed. Leopold Bellak (New York: Logos Press, 1958), pp. 556-692.

The very existence of childhood psychoses is still questioned, in part because of the multiple diagnostic classifications used in the psychopathologies of childhood which need clarification as to their criteria.[1,2,3]

The problems encountered by workers attempting to discriminate and differentiate among the psychopathologies of childhood have been parallel, as Ekstein, Bryant, and Friedman have suggested, to "the immensity of the task confronting the schizophrenic child in achieving his identity, individuation, and differentiation from other human beings."[4]

That the literature abounds with controversy and diagnostic confusion has been fully demonstrated in Ekstein, Bryant, and Friedman's review of the morass of diagnostic labels which have been used, e.g., functional psychosis, pre-psychosis, incipient or potential schizophrenia, childhood psychosis, schizophrenia like psychosis, pseudo-neurosis, abnormal child,

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[1] *Ibid*., p. 615.

[2] N. W. Ackerman, "Psychiatric Disorders in Children--Diagnosis and Etiology in Our Time," *Current Problems in Psychiatric Diagnosis*, ed. P. H. Hoch and Joseph Zubin (New York: Grune and Stratton, 1953), pp. 205-320.

[3] J. Franklin Robinson, "The Psychosis of Early Childhood," *American Journal of Orthopsychiatry*, XXXI (1961), 536-549.

[4] Ekstein, Bryant, and Friedman, *loc. cit*.

borderline psychosis, schizoid personality, ego-deviant children, sub-clinical schizophrenia, pseudo-schizophrenia, and anaclitic depression. They have suggested that "this state of diagnostic confusion is a reflection of the oceanic, global, and chaotic nature of the illness."[1]

Several workers have presented systematic reviews of the diverse thinking of the leading theoreticians' contributions towards unraveling the complexities inherent in the study of mental disorders in children;[2,3,4,5,6] however, the most extensive discussion of etiology, diagnosis, differential diagnosis, and treatment has been presented by Ekstein, Bryant, and Friedman.[7]

The principal tenets of the most frequently referred to theoreticians follow. Kanner has stated that the clinical syndrome, early infantile autism, is

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[1] Ibid., p. 594.

[2] Robinson, loc. cit.

[3] Harry Bakwin and Ruth Morris Bakwin, Clinical Management of Behavior Disorders in Children (Philadelphia: W. B. Saunders Company, 1960), pp. 531-550.

[4] Ruth Marie Clark, "Language Disturbance in Childhood Schizophrenia," Psychological and Psychiatric Aspects of Speech and Hearing, ed. Dominick A. Barbara (Springfield, Illinois: Charles C. Thomas, 1960), pp. 264-285

[5] J. Cotter Hirschberg and Keith N. Bryant, "Problems in the Differential Diagnosis of Childhood Schizophrenia," Neurology and Psychiatry in Childhood, ed. Ruston Mackintosh and Clarence C. Hare (Baltimore, Maryland: Williams and Wilkins Co., 1954), pp. 454-460.

[6] J. Tarlton Morrow, Jr., "The Nonverbal Child," Exceptional Children, XXV (April, 1959).

[7] Ekstein, Bryant, and Friedman, op. cit., pp. 556-692.

"a total psychobiological disorder," and can be distinguished from childhood schizophrenia by its onset, course, and history.[1] Bender has described childhood schizophrenia as the product of "a maturational lag at the embryonic level characterized by a primitive plasticity in all areas from which subsequent behavior develops."[2] Mahler has described "symbiotic psychosis," calling attention to the child's ego organization difficulties in being unable to differentiate the mother from the self.[3] Rank, Putnam, and others associated with the James Jackson Putnam Center have used the term "atypical" descriptively rather than diagnostically in their attempt to avoid the controversy of the validity of childhood schizophrenia and infantile autism.[4] The term "atypical" encompasses the entire spectrum of developmental deviations involving fragmentation or disintegration of the ego.[1]

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[1] Eisenberg and Kanner, op. cit., p. 564.

[2] Lauretta Bender, "Schizophrenia in Childhood--Its Recognition, Description, and Treatment," American Journal of Orthopsychiatry, XXVI (1956), pp. 499-506.

[3] Margaret S. Mahler, "On Child Psychosis and Schizophrenia. Autistic and Symbiotic Infantile Psychoses," The Psychoanalytic Study of the Child (New York: International Universities Press, 1952), VII, 286-305.

[4] Beata Rank, "Intensive Study and Treatment of Preschool Children who Show Marked Personality Deviations or 'Atypical Development', and Their Parents," Emotional Problems of Early Childhood, ed. Gerald Caplan (New York: Basic Books, Inc., 1955), pp. 491-501.

It is clear that consensus has yet to be reached concerning such questions as: Is infantile autism a distinct clinical and etiological entity? Should it be placed with childhood schizophrenia and the schizophrenias in general? How does it differ from those cases of mental retardation, brain injury, and other chronic or organic brain syndromes in which autistic-like symptoms are in evidence? Is its etiology psychogenic or biogenic?

In 1964 Bernard Rimland's book, Infantile Autism, comprehensively examined these questions and fulfilled a longstanding need to order the existing information into the first cohesive statement proposed to explain the paradoxical and perplexing speech/language, social, motor, and cognitive functioning of autistic children.

The Syndrome of Early Infantile Autism

From the clinical accounts available in the literature, Rimland has provided a composite picture of the natural history of the disorder, thus helping to establish its distinguishing characteristics.[1]

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[1] Beyond presenting these principal theoreticians the reader is referred to Ekstein, Bryant, and Friedman, op. cit., pp. 556-692, for their review of other major contributors, i.e., Despert, Klein, Anna Freud, Sjurek, Weil, Waal, Kestenberg, Spitz, Beres, Pavenstedt, Bergman, Escalona, Ribble, and Goldfarb.

Apart from a somewhat elevated incidence of prematurity, unusual complications of pregnancy were not in evidence in Kanner's reports of his first one hundred and twenty cases.[2] The criteria used for classifying the features of pregnancy or delivery as pathological have not been stated in Kanner's writings, nor is it clear how much attention was given to such aspects of the history taking.

As noted earlier, infantile autism is reportedly present from the beginning of life,[3] which most workers have accepted as one of the principal features distinguishing it from other childhood psychoses.

Early histories and later development of children often have been poorly established because of the parents' lack of adequate criteria and their inability to maintain a detached objectivity about the past or present.[4,5] In autism, however, highly detailed accounts of the child's early life have been uniquely available, due perhaps to the high number of intellectually gifted parents, their professional identities, and their early search for professional assistance while their child was still a toddler.

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[1] Rimland, op. cit., pp. 5-9.

[2] Leo Kanner, "To What Extent is Early Infantile Autism Determined by Constitutional Inadequacies?" Proc. Ass. Res. Nerv. and Mental Disorders, XXXIII (1954), pp. 378-385.

[3] Kanner, "Autistic Disturbances of Affective Contact," pp. 217-250.

[4] Sarnoff A. Mednick and John B. Shaffer, "Mothers' Retrospective Reports in Child-Rearing Research," American Journal of Orthopsychiatry, XXXIII (April, 1963), 457-461.

[5] Sylvia Brody, "Preventive Intervention in Current Problems of Early Childhood," Prevention of Mental Disorders in Children, ed. Gerald Caplan (New York: Basic Books, Inc., 1961), p. 171.

At no time during the child's life are adequate adjustments made. From the first few months, the autistic child appears grossly unresponsive.[1] Paradoxically, crying inexorably is not uncommon. If the parents have not recognized their child's unresponsiveness in the first few months, their suspicions become aroused when, by the fourth month, their child fails to accommodate his posture or display the extended arm gesture preparatory to being picked up. But even at this stage, most of the parents feel that their child's overall health is fine and that he is otherwise attractive, alert, and in some vague way advanced for his age. By six months, head banging, both when in the crib and when being held, coupled with feeding problems begin to distress the parents.

In the second half of the first year the foreshadowing of ominous trends in the child's behavior become much more prevalent, causing steadily mounting alarm, perplexity, or anxiety. Usually, by eighteen months, certain behavioral patterns are well established: vigorous headbanging, incessant rocking, and an all pervasive apathy or indifference to the environment, particularly people. Human beings apparently do not exist for the autistic child, manifest either in an active denial or gross aversion for people, and a preference for objects which has been described as "skillful and even affectionate."[1] Parents complain that they cannot attract the child's attention auditorily or visually and that in some cases even highly painful stimuli fail to evoke appropriate responses. The child appears to be in a world of his own, seemingly inaccessible and encapsulated in an impenetrable shell. This "autistic aloneness," as Kanner has referred to it, is one of the two principal diagnostic criteria.[2] The second diagnostically essential feature of the child's behavior is his rigorously rigid demand for the maintenance of order and sameness in his environment.[3] For the autistic child any change, no matter how minute, is likely to evoke a furious rage or other signs of profound emotional distress. The child's preoccupation with rituals and stereotyped modes of conduct are reflected in his intensive need to preserve sameness in his environment. Frequently reported by the parents is the child's absorption in repetitive manipulations of certain mechanical objects such as light switches, faucets, vacuum cleaners, jar lids, and stoves. Any attempts to distract or divert the child produce violent temper tantrums.

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[1] Leo Kanner, "Problems of Nosology and Psychodynamics of Early Infantile Autism," American Journal of Orthopsychiatry, XIX (1949), 416-426.

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[1] Hirschberg and Bryant, loc. cit.

[2] "Autistic Disturbances of Affective Contact," pp. 217-250.

[3] Ibid.

When the parents try to socialize the child in feeding, toileting, and dressing activities, they encounter intense resistance. Strange and extreme patterns of food aversions or preferences begin to emerge. Toilet training is not accomplished for years, and in some cases, not at all. Obsessions with clothing and prolonged elaborate rituals at bedtime are also noted.

Speech Behavior of Autistic Children

Of all the dimensions of the child's behavior which create perplexity, deviations in speech and language are the greatest. It is important to note that the parents begin their search for help most frequently when their child, now about two years old, has not developed a meaningful system of communication.

Approximately fifty percent of the known autistic children have been able to use speech, while the others have either never spoken or have spoken only once or twice in their lifetime.[1] Their lack of speech has been seen as fundamental to their inability to relate, rather than the consequence of any deficit in the sensory or perceptual apparatus. Terms such as "elective" or "voluntary mutism"[2] have been commonly used to represent the psychiatric view that the child refuses to speak and is grossly negativistic.

Virtually no attention has been paid to the receptive dimensions of language, the presumption usually being that comprehension does exist.[3] Robinson has warned, "We tend to read into the repeated statements or acts more comprehension on the part of the child than actually exists."[4] However, the autistic child's potential to speak often has been inferred from once in a lifetime utterances.

Unfortunately, the designation "mute" associated with the non-speaking, totally non-communicative child implies complete silence or aphonia,[5] and has led researchers to exclude descriptions of their vocal behavior. One notable exception has been Shervanian's thesis in which he has emphasized that the so-called "mute" autistic child does in fact produce a variety of phonemes. Shervanian has called attention to the fact that although verbalizations were not produced, vocalizations were heard and could be analyzed. During a fourteen day period, he gathered two samples of tape recordings of the vocal behavior of eight children who he identified as "pre-communicative." His findings were principally these: speech achievement ages covered a wide range and were significantly correlated with the children's ages; the sounds produced were predictable and phenotypically equivalent to babbling and lalling; vowel sounds and nasal consonants were well developed; and, plosive and fricative consonants and semi-vowels were underdeveloped. An absence of labial and lingua-dental sounds was also noted.[1]

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[1] Rimland, op. cit., p. 15

[2] Kanner, Child Psychiatry, p. 515.

[3] Ibid.

[4] Robinson, op. cit., p. 546.

[5] Kanner has defined mutism as "the absence of articulate speech." (Child Psychiatry, p. 513).

Those autistic children who use speech do not use it in ways which serve the communication process. Their speech is often precocious in the sense that words may be produced as early as the second half of the first year of life with complete sentences by one year of age. Rimland has provided an overview of their speech/language behavior, summarizing the available literature.

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[1] Christy Shervanian, "The Speech Developmental Level of Pre-Communicative Psychotic Children" (unpublished Doctoral dissertation, University of Pittsburgh, 1959).

> The speech is generally of a peculiar non-communicative kind, however, and is ordinarily produced in an empty high-pitched, parrotlike monotone. Whispering is very common, little or no expression is used, and, as it generally turns out, the speech is elicited only as specific responses to certain stimuli, and not as a means of communication. Naming of objects, for example, is common, but asking or answering questions is rare or absent. Desires are communicated by leading an adult by the hand to what is wanted. "No!" is often indicated by emphatically grunting and waving the arms.[1]

Descriptions of the peculiar use of language in autism have been presented by Kanner. He emphasized the children's irrelevant and metaphorical use of language, indicating that their productions "are rooted in the concrete, specific, personal experiences of the child who uses them."[2] Metaphorical productions such as a child saying, "Rabbits don't cry," when distressed, fearful, or suppressing tears would leave the listener confused. That the child had been told by the parent not to cry because her toy rabbit did not cry would not be evident; thus, the expression would appear irrelevant, silly, or incoherent. Pronominal reversals and the absence of the use of the words "I" and "Yes" have been regularly observed. When a child is asked a question, a literal, echolalic reproduction of what was said is used as an affirmative response. Accordingly, any interrogative such as, "Do you want some candy?" would not be restructured and would be repeated using it as a substitute for the declarative form. "Yes, I want some candy," or "I want some candy," or simply, "Yes," are seemingly not part of the verbal repertoire of the autistic child. Apparently the meaning of a word becomes inflexible and cannot be used with any but the originally acquired connotation.[1]

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[1] Rimland, op. cit., p. 14.

[2] Kanner, "Irrelevant and Metaphorical Language in Early Infantile Autism," p. 243.

The ability of these children to repeat endless numbers of rhymes, catechisms, lists of names, and other semantically useless exercises has been called delayed echolalia by Kanner.[2] This characteristic parroting of material heard perhaps days, weeks, or months prior to its actual evocation is especially confounding to the observer.

Scheerer, Rothmann, and Goldstein have likened this extraordinary display of auditory memory in autism to the remarkable ability of idiot savants to reproduce visual and auditory stimuli with amazing accuracy.[3] Sarason and Gladwin have pointed out that "it has indeed been a rare event in psychology and psychiatry when clinical problems which have been considered rather different are brought in relation to one another."[1] Discussing the autistic child's parroting of inordinate quantities of verbal material in the face of retardation in the semantic aspects of language, Scheerer, Rothmann, and Goldstein have criticized Kanner for attempting to account for this behavior on the basis of a disturbance of affective contact and the child's desire for aloneness and sameness. As their critique has been one of the few that has dealt with the speech/language aspects of autism, their comments have been included liberally as follows:

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[1] Kanner, Child Psychiatry, p. 740.

[2] Eisenberg and Kanner, op. cit., p. 556.

[3] M. Scheerer, Eva Rothmann, and Kurt Goldstein, "A Case of 'Idiot Savant': An Experimental Study of Personality Organization," Psychological Monograph, Vol. LVIII, No. 4, (1945).

> In following Kanner's impressive observations in support of his view, it appears nevertheless as if Kanner has neglected the qualitative nature of the intellectual abnormalities in this picture. The case histories abound with instances of compulsive concreteness in thought and action. In our opinion this is only explicable on the basis of an impairment of abstract attitude which is intimately bound up with the affective disturbance. To mention only a few problems, it is hard to see how an affective disturbance alone can account for what Kanner calls the "literalness" in these children, their inability to use "yes" as a general symbol of affirmation, detached from the specific situation in which it had been acquired; their inability to understand prepositions in the abstract sense. (Asked to put something down, the child puts it on the floor--understanding the word only in the originally acquired situational sense.) It is hard to follow Kanner when he makes the affect-anomaly responsible for: "the absence of spontaneous sentence formation and the echolalia type of reproduction, which in every one of the eight speaking children has given rise to a peculiar grammatical phenomenon. Personal pronouns are repeated just as heard. The child once told by his mother 'now I will give you your milk' exresses the desire for milk in exactly the same words.

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[1] Sarason and Gladwin, op. cit., p. 341.

Consequently he comes to speak of himself always as you and of the person addressed as I." We have encountered this reversal of pronouns in three cases here presented all of which showed pronounced impairment of abstraction.

This peculiar "grammatical" phenomenon appears to be more than a mere grammatical one or a purely mechanical echolalia. The child hears himself addressed as "you" and the other person speaking of himself as "I." Only on a concrete level of thinking is the literal application of the word "you" to the child himself and"I" to the other person explicable, because the child cannot detach the words from their experienced "belongingness" in the actual situation and reverse this belonging in terms of a relational symbol. (The corresponding phenomenon in normal children is their frequent use of their first name or the third person in referring to themselves.)

Is the child's inability to shift the word "you" from himself to the other person, and the word "I" from the other person, is this inability to grasp the relational meaning of "you" and "I" in the abstract, merely the result of the affective disturbance or is it not a symptom of impaired abstraction and limitation to the concrete as well?

. . . .

In Kanner's concepts it is the need for "sameness and autistic aloneness" that sufficiently accounts for both, this semantic retardation and for the abnormal retention of verbal material, which later he characterizes as completely senseless for the children. This makes it quite difficult to understand why they so eagerly and readily absorbed and reproduced such material, and even liked to spell out words. Is perhaps the fact that the children did not grasp the meaning of language in the normal way the motive for their heightened responsiveness to and their tenaciously obsessive reproduction of phonetic sound patterns? In the light of our own case material it seems highly probable that these children excelled precociously in verbal memory for the same reasons as we outlined in our hypothesis. And the question may arise, whether the disturbance in affective human contact they suffered is not secondary to the defect in abstraction or parallel to it. Perhaps this hindered a normal grasp of the semantic aspect of language and impelled these children to cling to that aspect

> of speech which was concretely sensible and apprehensible for them in terms of auditory motor patterns.[1]

With the exception of Kanner's original work, few formal studies of the speech/language characteristics in infantile autism and/or childhood schizophrenia have been available in the literature. Goldfarb, Braunstein, and Lorge have noted that the emphasis in the literature dealing with schizophrenic children "usually has been on deviations in the content of, and the symbolic elements in, language."[2] A recent example of this has been found in a study by Weiland and Legg in which they quantified the frequency of eleven parts of speech occurring during ten to twenty minute intervals with thirty-four psychotic children. They noted the relatively low frequency of the use of first person pronouns "we" and "I" and offered a psychoanalytical interpretation which might explain the decreased use of "we" as an indication of the narcissistic orientation of the child or that "shared or social experiences have far less significance for psychotic youngsters and therefore they are less prone to use language forms which identify such experiences.[1]

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[1] Scheerer, Rothmann, and Goldstein, op. cit., p. 57.

[2] William Goldfarb, Patricia Braunstein, and Irving Lorge, "A Study of Speech Patterns in a Group of Schizophrenic Children," American Journal of Orthopsychiatry, XXVI (1956), pp. 544-555.

Limited information has been available about the idiosyncratic speech and voice characteristics of psychotic children. While mention has occasionally been made of the speech peculiarities, this dimension has not been reported on adequately. Goldfarb, Braunstein, and Lorge have offered one of the few systematic studies of the utterances of schizophrenic children. They used a speech pathologist to analyze the spontaneous productions of twelve schizophrenic children from tape recorded samples comparing their verbalizations against the model of culturally expected patterns for phonation, intonation, and articulation. Their sample of schizophrenic children showed a greater number and wider range of speech deviations from normal except in one dimension of phonation--voice quality. Two nonverbal children were eliminated from the sample because one was totally non-communicative and the other exhibited "elective mutism."[2]

In a preliminary investigation prior to the conduct of this study, Pronovost established the feasibility of objective measurement of the speech behavior, language comprehension, and relationship to the environment of children designated as autistic in a residential school. Through clinical observations his pilot study confirmed the speech and vocal behavior findings of Goldfarb and Shervanian. He also reported that the children showed some primitive abilities in language comprehension, but were less able to comprehend abstract or complex language expressed in sentences.[1]

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[1] I. Hyman Weiland and Donald R. Legg, "Formal Speech Characteristics as a Diagnostic Aid in Childhood Psychosis," American Journal of Orthopsychiatry, XXXIV (January, 1964), pp. 91-95.

[2] Goldfarb, Braunstein, and Lorge, op. cit., p. 546.

Differential Diagnosis

When explanations for the child's aberrant behavior are first sought, suspicions of deficiencies in hearing and/or mental retardation are in the foreground. Failure to respond to the human voice or, in some cases, to intense and sudden noise is paradoxically in evidence either parallel to or alternating with a hypersensitivity for sound.[2] Notions about a hearing loss or deafness are quickly dispelled when the child is observed selectively reproducing sounds of his environment. These may include things said to him, musical phrases which he has heard, or other environmental stimuli.

Classifying the children as retardates has been rejected by Kanner on a variety of grounds.[3]

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[1] Pronovost, loc. cit.

[2] William Goldfarb, Childhood Schizophrenia (Cambridge, Massachusetts: Harvard University Press, 1961), p. 99.

[3] Kanner, Child Psychiatry, p. 742.

He has been impressed with the autistic child's intelligent appearance, citing this as one of the distinguishing criteria which he has stated is sharply contrasted to the dull, vacuous facial expression of the mentally deficient. Facial expressions of preoccupation, concentration, day-dreaming, or being lost in thought have suggested that the non-communicative, unreachable autistic child has intelligence beyond that expected in the mentally retarded, to the extent that Rimland has conjectured that the child appears as if he may be "reliving an experience in minute detail, hearing music long since forgotten or perhaps never heard by others, or playing games with numbers or objects manipulatable only in the recesses of his brain."[1]

While the autistic child may appear similar to the mentally defective, the simple repetitive activity of the retardate differs qualitatively from the elaborately conceived ritualistic activity seen in autism.[2] Other features offered by Kanner as primary evidence to support his auguments against a diagnosis of mental retardation have included: early and skilled motor or manual performance; a phenomenal display of memory for auditory and visual material; successful performance on the Seguin Formboard, with jig-saw puzzles, and other tasks involving spacial memory; and startling musical abilities.

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[1] Rimland, op. cit., p. 13.

[2] Eisenberg and Kanner, op. cit., p. 558.

Kanner has viewed the preservation of these isolated areas of unusual intellectual performance as evidence that autistic children have good cognitive and intellectual potentialities despite their social imbecility. As these children are notoriously untestable, he has offered the "extraordinary, if perverted, use of language, manifesting feats of unusual memory," as evidence of good cognitive potentialities in the verbal group; while with the nonverbal or "mute" children, intellectual potentialities are inferred on the basis of their facility with performance tests, particularly the Seguin Formboard.[1]

He has asserted that although autistic-like symptoms may be present in the "inately-retarded" and in brain injured children, the essential features of extreme aloneness and preservation of sameness must be present to make the diagnosis of autism.[2]

It has been pointed out that many autistic and schizophrenic children have been institutionalized as retardates in the presence of their isolated areas of motor and mental abilities because of "diagnostic blurring.[1,2] Scheerer, Rothmann, and Goldstein have likened the unique performance of the autistic child to that found in the "idiot savant," suggesting that the areas of successful performance are evidence of "perceptual centering in which the intact perceptual modality is unduly exercised to the exclusion of others."[3] A similar view has been expressed by Gellner: "In any kind of spontaneous activity shown by a child we witness the enjoyment of his activity, and we can be sure that it is based on the employment of intact cerebral pathways."[4]

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[1] Ibid., p. 557.

[2] Ibid.

Thinking of autism as a form of psychosis rather than as mental retardation has been and continues to be prevalent. Mental retardation has been suggested by Rimland to be a more comprehensible diagnosis when autism's diverse symptoms and manifestations are viewed as gross impairment in the ability to "associate stimuli in the foreground of consciousness with all but a

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[1] Abraham A. Fabian and Marjory A. Holden, "Treatment of Childhood Schizophrenia in a Child Guidance Clinic," American Journal of Orthopsychiatry, XXI (1951), 571-579.

[2] Sarason and Gladwin, op. cit., p. 311.

[3] M. Scheerer, E. Rothmann, and K. Goldstein, loc. cit.

[4] Lise Gellner, A Neurophysiological Concept of Mental Retardation and Its Educational Implications (Chicago, Illinois: The Dr. Julian D. Levinson Research Foundation for Mentally Retarded Children, 1959), p. 44.

limited fragment of the content of memory instilled by previous experience."[1]

Family Backgrounds

"One of the striking features of the clinical histories remains the unusually high percentage of these children who stem from highly intelligent, obsessive, and emotionally frigid backgrounds."[2] While it has been recognized that these parents have raised other non-psychotic children, and that similarly frigid parents have produced non-autistic offspring, Eisenberg and Kanner have reported that the mechanical child-rearing practices used have led to profound emotional deprivation and have been, therefore, viewed as the principal dynamic in the etiology of autism.[3,4]

The majority of children diagnosed as autistic have had parents who far exceed the norm in intellectual endowment, educational achievement, and occupational status. A low incidence of mental illness, divorce, and separations also has distinguished the arents reported by Kanner.[1] It has been argued by Bender that only the intellectually sophisticated and otherwise elite have sought Kanner's services.[2] However, Kanner has rejected the notion that his sampling was selective, asserting that the unusual parents of autistic children, i.e., physicians, scientists, writers, journalists, and students of art, were not found among the wide range of parental types seen in his clinic.[3]

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[1] Rimland, op. cit., p. 119.

[2] Eisenberg and Kanner, op. cit., p. 561.

[3] Ibid.

[4] Leon Eisenberg, "The Fathers of Autistic Children," American Journal of Orthopsychiatry, XXVII (1957), 715-724.

Jewish and Anglo-Saxon families were disproportionately represented in Kanner's sample with twenty-seven of the first one hundred cases reported of Jewish origin. However, Rimland has observed that this was not remarkable when the professional attainment of the Jewish group is recognized, in that fifty percent of male Jews are likely to be employed in the professional, managerial, and executive group even though only twenty percent of urban occupations are in this class.[4]

Descriptions of parental personalities have emphasized their emotional frigidity and obsessiveness.[1,2,3] They have been compared to refrigerators by Kanner who has commented that "they defrosted long enough to conceive a child."[4] Mechanistic parental handling of autistic children has been cited as an explanation for their behavior. When Kanner described this aspect of the syndrome he likened the parents to the "mechanized service which is rendered by an overconscientious gasoline station attendant."[5] Such comments have been used as arguments to support psycho-social etiological factors. Supporters of the organic etiological perspective have also been adamant, suggesting that "there is a question about whether these emotional variables are in the patient or in the investigator.[6]

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[1] Kanner, "Problems of Nosology and Psychodynamics of Early Infantile Autism," p. 421.

[2] Lauretta Bender, "Autism in Children With Mental Deficiency," *American Journal of Mental Deficiency*, LXIII (1959), 81.

[3] Eisenberg and Kanner, *loc. cit*.

[4] Rimland, *op. cit*., p. 24.

Examining the training of workers who have elected to serve children, particularly psychotic children, Ekstein has expressed the feeling that the

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[1] J. Louise Despert, "Some Considerations Relating to the Genesis of Autistic Behavior in Children," American Journal of Orthopsychiatry, XXI (1951), 335-350.

[2] Irving Kaufman, et al., "Parents of Schizophrenic Children," American Journal of Orthopsychiatry, XXIX (1959), 460-472.

[3] Eisenberg, loc. cit.

[4] Time, July 25, 1960, p. 78.

[5] Kanner, "Problems of Nosology and Psychodynamics of Early Infantile Autism," p. 424.

[6] Hilda Knobloch and B. Pasamanick, "Some Thoughts on the Inheritance of Intelligence," American Journal of Orthopsychiatry, XXXI (July, 1961), 471.

child therapists' reactions to the parents have been profoundly affected by an essential hostility towards parents and authority figures generally, their over-identification with the child, and their need to salvage the hurt child believing that they "may be the miracle worker who can do it."[1]

Notwithstanding the etiological controversy, there have been two parental personality characteristics that have been universally reported--"objectivity and unemotionality."[2] Removing these personality features from the realm of abnormal psychology, Rimland has proposed an explanation of these findings in terms of the parents' highly rational behavior and outstanding ability to maintain intellectual control over their emotions. Also, he has explained that the parents' detailed reporting, which has been of such high quality, has often been erroneously referred to as evidence of their obsessive personalities and that while correlations may have been found between parent personalities and the child's behavior, they do not constitute proof.[3]

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[1] Rudolph Ekstein, "Special Training Problems in Psychotherapeutic Work with Psychotic and Borderline Children," American Journal of Orthopsychiatry, XXXII (July, 1962), 574.

[2] Bernard Rimland, Infantile Autism (New York: Appleton-Century-Crofts, 1964), p. 152, quoting Leo Kanner, Time, July 25, 1960, p. 78.

[3] Rimland, op. cit., p. 27.

The Controversies

Etiological considerations have been predominently psychogenic with many writers claiming that the distinct pattern of parental personalities and intelligence were incontrovertible evidence.[1] That biological causation has not been a favored view has been amply documented by Rimland who has noted that the biologically trained worker has been disinclined to study the problem because those clinical workers who have been dealing directly with the problem have so vigorously "asserted rather than suggested that psychogenic factors play a major part in the etiology of the disease.[2]

The need to establish the specificity of autism's etiology has been seen as critical when the lives of families and individual children have been so profoundly affected.

> If the disease is psychogenic, the causative factors need to be identified. On the other hand, if autism is determined solely by organic factors, there is no need for the parents of these children to suffer the shame, guilt, inconvenience, financial expense and marital discord which so often accompany the assumption of psychogenic etiology.[3]

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[1] Maleta J. Boatman and S. A. Szurek, "Clinical Study of Childhood Schizophrenia," The Etiology of Schizophrenia, ed. Don J. Jackson (New York: Basic Books, Inc., 1960), pp. 389-440.

[2] Rimland, op. cit., p. 39

[3] Ibid., p. 40

Several relevant personal accounts of these issues have been presented in the published reports of parents of children diagnosed as autistic.[1,2,3]

Rimland has succinctly outlined the arguments offered in the psychogenic versus biogenic etiological controversy.

> The case for psychogenesis of autism would appear to rest on the following arguments and assumptions: (1) No consistent physical or neurological abnormalities have been found in autistic children which could account for their condition. (2) Many autistic children have been raised by parents apparently deficient in emotional responsiveness, which could have pathogenic effects on the child. (3) Certain children raised in hospitals or orphanages where maternal contact was sparse have been reported to show an undue frequency of emotional difficulties. (4) The behaviors of the child--his indifference or aggressiveness, his refusal to speak (or "elective mutism"), his apparent withdrawal from the outside world--are interpreted as signs of "punishment" or "retaliation" against the parents. (5) Certain incidents in the life of the autistic child appear to be pathogenic and permit the disorder to be traced to them. (6) Psychotherapy or otherwise placing the child in a kind and understanding environment has beneficial effects. (7) The high incidence of first-born and only children suggests that parental attitudes may be causative.[4]
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> The case for biological causation: (1) Some clearly autistic children are born of parents who do not fit the autistic parent personality pattern. (2) Parents who do fit the description of the

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[1] Jacques M. May, A Physician Looks at Psychiatry (New York: John Day, 1958).

[2] Oppenheim, loc. cit.

[3] Stuart, loc. cit.

[4] Rimland, op. cit., p. 42.

> supposedly pathogenic parent almost invariably have normal, non-autistic children. (3) With very few exceptions, the siblings of autistic children are normal. (4) Autistic children are behaviorally unusual "from the moment of birth." (5) There is a consistent ratio of three or four boys to one girl. (6) Virtually all cases of twins reported in the literature have been identical, with both twins afflicted. (7) Autism can occur or be closely simulated in children with known organic brain damage. (8) The symptomatology is highly unique and specific. (9) There is an absence of gradations of infantile autism which would create "blends" from normal to severely afflicted.[1]

After exhaustively examining each of the arguments of both sides of the question, Rimland has concluded that the psychogenic hypotheses are "inadequate and pernicious."[2]

The strongest evidence for biogenesis of autism would be found in autopsy findings. Unfortunately, post-mortem reports have not been sought because most workers have not felt that they have been warranted.[3] As with Heller's disease, it may well be found that many children treated as autistic were brain damaged and their behavioral pathology masked the actual etiology. Of particular poignancy here is the case reported by Ross of a brain damaged girl treated as autistic.[4] Only the child's death at age eleven interrupted intensive

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[1] *Ibid*., p. 51.

[2] *Ibid*., p. 61.

[3] Kanner, "Problems of Nosology and Psychodynamics of Early Infantile Autism," p. 417.

[4] I. S. Ross, "An Autistic Child," *Pediatric Conferences* (Babies Hospital Unit, United Hospitals of Newark, N.J., 1959), II, pp. 1-13.

(three times weekly) psychotherapy. Treatment had been based on an assumedly defective parent-child relationship in which the mother was described as intellectualized and objectified.

That intensive and repeated neurological examinations, including electroencephalographic studies, have failed to uncover central nervous system pathology in autism has commonly been cited as evidence supporting the psychogenic etiology; however, the case just mentioned in which extensive degeneration of brain tissue was found at post-mortem had had numerous neurological examinations, all with negative findings. Neglect of organic factors has seemed justified to Bettelheim who has argued that those who hold an organic view cannot do anything about it while psychoanalytical "understanding and treatment yield some quite worthwhile results."[1]

Chess has referred to diagnoses emphasizing psychogenesis as serving the function of "a magical talisman to ward off the evil of permanent disability."[2] It is not strange that soft neurological signs or even positive signs of organic pathology have been disregarded in the diagnostic evaluations of children with behavior disorders. As Anderson and Plymate have pointed out:

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[1] Bruno Bettelheim, "Schizophrenia As A Reaction to Extreme Situations," American Journal of Orthopsychiatry, XXVI (July, 1956), 507-518.

[2] Stella Chess, "Psychiatric Treatment of the Mentally Retarded Child With Behavior Problems," American Journal of Orthopsychiatry, (October, 1962), 864.

> There have even been research situations where positive (i.e. abnormal) findings were so routinely found in behavior disorders of children that they were discarded for that very reason! The preconceptions of the clinicians that the problems were psychodynamic were so strong that the EEG findings were considered invalid and inconsequential.[1]

Attacking the not uncommon practice of diagnosing mental illness and ruling out organic factors without physically examining the child, May has offered his own experiences with his twin boys.[2] It has been suggested that neurology is an infant science and "a negative result with current methods cannot be regarded as a conclusive demonstration of the lack of central nervous system pathology."[3] Sarason and Gladwin have reported the unexpected findings of negative (normal) EEG results in obviously brain-damaged cerebral palsied children.[4]

Because the parents of autistic children have been reported to be mechanistic in their handling of their children, the disorder's psychogenic origins have been likened to the syndrome of hospitalism or maternal deprivation. Several workers have attacked the popular reference to the maternal deprivation hypothesis as inadequate.[1,2] Casler has critically examined the maternal deprivation studies, concluding that mother-child separation and subsequent institutionalization need not be detrimental and that there has been much evidence that the emotional, physical, and intellectual malfunctions which frequently have occurred among children in many institutions were not the "grave" consequences of lack of mother love but rather the product of perceptual deprivation--the absolute or relative absence of tactile, vestibular, and other forms of stimulation.[3]

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[1] C. Anderson and H. Plymate, "Management of the Brain-Damaged Adolescent," American Journal of Orthopsychiatry, XXXII (1962), 492-500.

[2] May, loc. cit.

[3] Eisenberg and Kanner, op. cit., p. 560.

[4] Sarason and Gladwin, op. cit., p. 365.

A unique perspective on the consequences of sensory deprivation has been offered by Cobb relating the schizophrenic phenomenon, experimentally induced in adults, to the symptoms seen in the atypical and autistic child. "What these deprivations may do to

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[1] Juanita Chambers, "Maternal Deprivation and the Concept of Time in Children," American Journal of Orthopsychiatry, XXXI (April, 1961), 415.

[2] Benjamin Pasamanick and Hilda Knobloch, "Epidemiologic Studies on the Complications of Pregnancy and the Birth Process," Prevention of Mental Disorders in Children, ed. Gerald Caplan (New York: Basic Books, inc., 1961), p. 87.

[3] Lawrence Casler, Maternal Deprivation: A Critical Review of the Literature ("Monographs of the Society for Research in Child Development"; Vol. XXVI, No. 2; Yellow Springs, Ohio: The Antioch Press, 1961).

the growing brain is still an all-important field for physiological and psychological exploration."[1]

Reacting to the tendency of psychiatric reports to explain the behavioral difficulties of children exclusively in terms of defective maternal handling, Chess has challenged the efficacy of this reasoning and has denounced the practice of studying the mother while failing to evaluate the child. To describe the prevalence of this practice, Chess has outlined the derivation of the popularization of the slogan "to meet Johnny's mother is to understand his problems."

> The standard procedure is to assume that the child's problem is reactive to maternal handling in a one-to-one relationship. Having come to this conclusion, the diagnostician turns his further investigation unidirectionally toward negative maternal attitudes and the conflicts presumed to underly these. Investigation in other directions is done in a most cursory fashion, or not at all. At the diagnostic conference, speculations are made concerning the mother's relationships with her own parents, her degree of immaturity, her presumed rejection of this child and her overcompensations for this rejection. Single bits of data fitting in with these speculations are quoted as typical of the child's feelings and the mother's attitudes and are taken as proof of the thesis of noxious maternal attitudes as universal causation.[2]

It is not unusual to find theoretical references made to particularly traumatic incidents or extreme situations as having etiological significance in autism;[1] however, that such incidents can produce disorder has yet to be demonstrated. The most severely traumatized children have not all developed psychiatric disorders, nor have all autistic children suffered particularly devastating trauma.[2]

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[1] Stanley Cobb, "Forward," Sensory Deprivation, ed. P. Solomon et al. (Cambridge, Massachusetts: Harvard University Press, 1961).

[2] Stella Chess, "Mal de Mere," American Journal of Orthopsychiatry, XXXIV (July, 1964), p. 613.

Minimal gains in psychotherapy, usually with individual cases, have often been offered as proof of psychogenesis; yet, the bulk of autistic children have not responded to psychotherapy.[3] The untenable position of arguing for psychogenesis on the basis of experiences in psychotherapy has belonged largely to psychoanalysts or analytically oriented workers who have been the major contributors of studies in psychotherapy.[4] The more recent works of the supporters of psychogenic hypotheses have now conceded that there is room to consider biological causation.[5,6]

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[1] Bettelheim, loc. cit.

[2] Rimland, op. cit. p. 44.

[3] Ekstein, Bryant, and Friedman, op. cit., p. 651.

[4] Ibid.

[5] Sidney L. Werkman, "Present Trends in Schizophrenic Research: Implications for Childhood Schizophrenia," American Journal of Orthopsychiatry, XXIX (1959), 473-478.

[6] Mary A. Sarvis, "Psychiatric Implications of Temporal Lobe Damage," The Psychoanalytical Study of the Child (New York: International University Press, 1960), XV, 454-481.

Infantile Autism Versus Childhood Schizophrenia

The differentiation between these two disorders had presented an especially difficult task until Rimland set forward the distinguishing features, some of which are summarized below.[1]

The onset of autism has been described as being present from the beginning of life while childhood schizophrenia presumably has appeared only after some normal developmental progress has been made.

Autistic children have tended to be healthy, while schizophrenics have distinctly been afflicted with somatic disorders involving respiratory, circulatory, metabolic, dermatologic, and digestive disturbances. Repeated emphasis has been given the attractive appearance of autistic children, and to the fact that they often have been dark complexioned. This again has contrasted sharply with schizophrenic children who have been described as having fair skin, which has been so thin that it has appeared translucent. Blond and blue-eyed children have been more prevalent among the schizophrenic group, as have been receding chins and small faces, all of which contributes to a foetus-like appearance.

When autistic children are held by adults they are peculiarly unresponsive, showing a lack of adaptation to people by maintaining themselves stiffly. This has been in marked contrast to the pronounced plasticity or molding to the contours of the adult's body as seen in childhood schizophrenia.

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[1] Rimland, op. cit., pp. 67-76.

Hallucinations have been more characteristic of childhood schizophrenia, often involving complicated auditory and visual delusional systems; however, in autism this has not been the case. Additional contrasts between the two groups have included differences in motor performance, language and personal orientation, conditionability, twins, family background, and familial mental disorders.

Electroencephalographic studies of autistic children strongly have tended towards normal, while schizophrenic children have had a significantly higher number of positive EEG recordings.[1]

The two "pathognomic" features of autism, aloneness and the need for the preservation of sameness have not been common among the schizophrenic children.

An abnormal tendency towards concreteness and an impairment in abstract capacity has been reported as fundamental in both groups.

Follow-up studies have indicated that the childhood schizophrenic grows up to be an adult schizophrenic while the autistic child remains essentially unchanged.[1,2,3]

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[1] Rimland, op. cit., p. 70.

Therapy

Until such time as consensus is reached as to the etiology, and precise diagnoses are developed for childhood psychoses, all therapy procedures are open to question. Attempts at therapeutic intervention in childhood psychosis have ranged from neurosurgery (lobotomy) reflecting the wretched prognosis and pessimistic viewpoint,[4,5] to the esoteric approach of symbolic realization described by Sechehaye.[6] This diversity in therapy approaches has been a natural by-product of the different inclinations and opportunities of the researchers.

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[1] George C. Darr and Frederick G. Worden, "Case Report Twenty-eight Years After an Infantile Autistic Disorder," American Journal of Orthopsychiatry, XXI (1951), pp. 559-568.

[2] Alfred M. Freedman and Lauretta Bender, "When the Childhood Schizophrenic Grows Up," American Journal of Orthopsychiatry, XXVII (1957), 553-562.

[3] Leo Kanner and Leon Eisenberg, "Notes on the Follow-up Studies of Autistic Children," Psychopathology of Childhood, ed. P. Hoch et al. (New York: Grune and Stratton, 1955).

[4] W. Freeman and J. Watts, "Schizophrenia in Childhood: Its Modification by Prefrontal Lobotomy," Digest of Neurology and Psychiatry, XV (1947), 202-219.

[5] L. R. Angus, "Prefrontal Lobotomy As a Method of Therapy in a Special School," American Journal of Mental Deficiency, LIII (1949), 470-476.

[6] M. Sechehaye, Reality Lost and Regained. Autobiography of a Schizophrenic Girl, trans. G. Rubin-Rabson (New York: Grune and Stratton, 1951).

Of the somatic therapies, interest has diminished in psychosurgery as new types of psychoactive drugs, particularly the tranquilizers, have become increasingly available. Insulin and electroshock therapies have been used in hundreds of cases involving children of all ages, and as early as three years old. Success with "shock" treatment has been usually indicated as improvement but not as a cure for, in of itself, it is not a specific treatment. Ekstein, Bryant, and Friedman have pointed out that careful experimentation has not yet been conducted and that drugs and electroshock therapies have often been used too freely.[1] Silver has made particular reference to the so-called mute autistic child whose speech has not developed, finding that no benefits for speech development were derived from electroshock.[2] Bender has been in the foreground of these physiological therapies and has had a wide sphere of influence in the numerous persons trained under her supervision at Bellevue Medical Center.[3] Her concept of a maturational lag has placed hereditary and constitutional factors at the core of the problem; accordingly, treatment directed towards these biophysiological dimensions has been considered useful by implication.

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[1] Ekstein, Bryant, and Friedman, op. cit. p. 631.

[2] A. A. Silver, "Management of Children with Schizophrenia," American Journal of Psychotherapy, IX (1955), 196-215.

[3] Lauretta Bender, "Treatment of Juvenile Schizophrenia," Ass. Res. Nerv. and Ment. Dis., (1954), 462-477.

Contributions to the literature by psychoanalysts or analytically oriented workers have been devoted to individual case studies, surveys, or generic accounts serving as introductions to the field rather than systematic studies which would move our knowledge forward.[1]

> Historically, we find ourselves in a situation where there is not yet a complete, systematic, integrated theory of the treatment of childhood schizophrenia and related disorders, but where there are available only many fragmented parts of a technique.[2]

Inasmuch as the analytically oriented workers have stressed that the etiology of psychoses in childhood has been accountable to a defective parent-child relationship, the child-therapist relationship has been viewed as the matrix of the therapy process. Escalona has provided an overview of the psychiatric rationale for the treatment of psychotic children.

> We assume that what has been done to a human being can be undone. Thus we believe that if a maladjusted child can experience--in his relation to the therapist--some of the gratification and the sense of continuity and stability which he lacked in his earlier life, if he can be helped to remember and understand events which were traumatic to him, and if his misconceptions about

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[1] Ekstein, Bryant, and Friedman, op. cit., p. 651.

[2] Ibid., p. 650.

> human affairs can be interpreted in terms of his needs, then normal processes of ego development can be resumed, and the object of psychotherapy will have been achieved. Therapeutic endeavors, therefore, are directed at permitting the expression of previously unconscious material, fantasies are seen as meaningful and interpreted in the context of the child's reality experiences, and the relationship between affects and their source, as well as between symptoms and their deeper meaning, is explored.[1]

It has appeared that regardless of the theoretical orientation of the therapist in the treatment of autistic/schizophrenic children "it is necessary to invoke special techniques to establish and maintain a therapeutic relationship.[2] Hirsch has stated that the therapist must declare himself at the child's service, volunteering his entire self. He has called for acceptance, understanding, and responses to the child at whatever level the therapist can reach the child. In order to establish contact, Betz has described the active intervention of the therapist who assumes the initiative in a parallel play relationship by participating in the idiosyncratic behavior of the child.[3] Similarly, Kaufman and others have

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[1] Sibylle Escalona, "Some Considerations Regarding Psychotherapy with Psychotic Children," Child Psychotherapy, ed. Mary R. Haworth (New York: Basic Books, Inc., 1964), pp. 50-57.

[2] Ernest A. Hirsch, "Interpretative Flexibility as a Condition Set by Schizophrenic Children in Psychotherapy," American Journal of Orthopsychiatry, XXX (1960), 397-404.

[3] Barbara Betz, "Study of Tactics for Resolving the Autistic Barrier in the Psychotherapy of the Schizophrenic Personality," American Journal of Orthopsychiatry, CIV (1947), 267-273.

have explained,"it is essential that the therapist initiate the reaching out in an active way because the schizophrenic child is paralyzed with his fear and is unable to achieve the necessary human relationship on his own."[1]

The results of psychoanalytically oriented treatment approaches have been discouraging, with most workers reporting only temporary improvement and a significant lack of long-term gains in reality testing and in relatedness to others.[2,3,4] Progress in treatment beyond the establishment of parallel play or symbiotic-like relationships have not been reported in the literature.

Early infantile autism has proven especially intractable to any type of therapy. Children who received what Kanner has described as "good psychotherapy" have done no better than children who had "poor psychotherapy" or no psychotherapy at all.[5] In fact, those children who received minimal professional assistance tended to show greater improvement.

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[1] I. Kaufman et al., "Childhood Schizophrenia: Treatment of Children and Parents," Journal of Orthopsychiatry, XXVII (1957), 683-690.

[2] Bender, "Schizophrenia in Childhood: Its Recognition, Description and Treatment."

[3] Darr and Worden, loc. cit.

[4] Escalona, op. cit., p. 54.

[5] Leo Kanner, "General Concept of Schizophrenia at Different Ages," Proc. Ass. Res. Nerv. and Ment. Dis., XXXIV (1954), 451-453.

Weiland and Rudnik have reported that their efforts to directly modify the speech and language behavior of autistic or autistic-like children have not been successful beyond the development of concrete nouns and a few verbs.[1] Their explorations were conducted along the lines used by McGinnis for aphasic children.[2] They have proposed that following the development of a symbiotic-like relationship, speech could be "teased" from the autistic child if the workers permitted gratification only when addressed appropriately, based on the assumption that it was the only possible source of gratification and must be reckoned with as capable of severely frustrating the subject.

While the analytically oriented workers value the creation of a strong dependent relationship, the advocates of child-centered therapy have had as their objective the facilitation of self-determined change, believing that each child has the ability to solve his own problems in his own time while taking responsibility for himself in the therapy process. An exponent of child-centered play therapy, Moustakas has expressed the belief that the therapeutic relationship itself is primary in the therapy process. For Moustakas "the relationship is both means and end."[1] Thus focused upon the "living relationship" he has designated his child-centered approach as "relationship therapy."

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[1] I. Hyman Weiland and Robert Rudnik, "Considerations of the Development and Treatment of Autistic Childhood Psychoses," Psychoanalytic Study of the Child, XVI (New York: International Universities Press, 1961), pp. 549-562.

[2] M. A. McGinnis, Aphasic Children: Identification and Education by the Association Method (Washington, D.C.: Alexander Graham Bell Association for the Deaf, 1963).

In his experiences with the avowedly incurable or hopeless cases for whom only custodial care had been recommended, Moustakas has recounted his relating with these children creatively in a person to person relationship which he has compared to the existential I-Thou relationship of Martin Buber. Observing that these disturbed children who have been labeled "bizarre" have been unaffected by the typical therapy strategy and management, he has expressed the feeling that they must be:

> . . . related to uniquely because their orientation and structuring, their patterns of expressions, are so completely unusual. . . . It requires a willingness to plunge into an unknown journey and take untraveled pathways. . . .[2]

Thus, the child-centered therapist does not have a stereotyped manner of conduct, nor any special bag of tricks, nor set pattern of techniques to be used. He comes to therapy then with an absorbing personal purpose--to understand the child.

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[1] Clark E. Moustakas, Psychotherapy With Children (New York: Harper and Brothers, 1959), xiv.

[2] *Ibid.*, pp. 134-135.

Implementation of the therapeutic relationship has been approached through play by both the child-centered and psychoanalytical workers; however, as Ekstein and Friedman have indicated, the psychoanalytical use of play techniques has differed from the client-centered approach as has the nature of the relationship.

> The child's play, the royal road to his unconscious can be considered the dominant language of the child and thus his most powerful means of communication with the therapist.[1]

Since communication is the matrix of psychotherapy, and with minimal or no verbal communication available in the autistic child, child-centered play therapy seemed highly desirable and, therefore, was elected as a means to explore the speech and language behavior of the children in this study.

Discussing children with communication disorders, Murphy and FitzSimons have pointed out:

> Play's therapeutic value lies in giving the child a chance to communicate some aspects of his inner world to an understanding adult, to re-evaluate his perceptions and confusions; in short, to integrate. The clinician enters the child's world by allowing him to speak his own language, often a highly nonverbal, symbolic, esoteric one.[2]

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[1] Rudolph Ekstein and Seymour Friedman, "On the Meaning of Play in Childhood Psychosis," Dynamic Psychopathology in Childhood, ed. Lucie Jessner and Eleanor Pavenstedt (New York: Grune and Stratton, 1959), p. 272.

[2] Albert T. Murphy and Ruth M. FitzSimons, Stuttering and Personality Dynamics (New York: The Ronald Press Co., 1960), p. 226.

Child-centered play therapy has not usually been thought of as having particular application to the autistic/schizophrenic child because the authorities espousing a client-centered philosophy, who have dealt with children, have done so without diagnostic studies; accordingly, their accounts of psychotherapy have been presented without nosological specificity. As Axline has explained, "Regardless of symptomatic behavior the individual is met by the [child centered] therapist where he is.[1]

While an anti-diagnostic attitude has also existed in child psychiatry, its origins are found to be, according to Rabinovitch, a reaction to the over-concern with nosology and classification, and the need to treat the whole child.[2] Rabinovitch has indicated that this attitude has been changing and that there has recently been a trend towards careful diagnosis on both the biological and psychodynamic levels prior to treatment.

The child-centered therapists' anti-diagnostic attitude has been based upon "a positive theory of the individual's ability. . . . What has happened in the past is past history. . . . When the nondirective therapist says that therapy is client-centered, he really means it, because to him the client is the source of living power that directs the growth from within himself."[1] No attempt is made by the child-centered therapist to move the child towards therapist established goals or to remake the child to fit a particular image.

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[1] Virginia Axline, "Nondirective Therapy," Child Psychotherapy, ed. Mary R. Haworth (New York: Basic Books, Inc., 1964), pp. 39-45.

[2] Ralph D. Rabinovitch, "An Evaluation of Present Trends in Psychotherapy With Children," Child Psychotherapy, ed. Mary R. Haworth (New York: Basic Books, Inc., 1964), pp. 39-45.

With little more than philosophical constructs taken from the studies by Carl Rogers with adults,[2,3] the research in child-centered play therapy has been depletive, and as Dell Lebo has suggested "persuasive propoganda lacking experimental procedures."[4] In his review of the research in child-centered play therapy, he has indicated that it is an objectively measurable process but that, as yet, the improvement seen in children who have experienced a child-centered therapy cannot be explained on the goodness of the treatment or as proof of its philosophical foundations. Research material on child-centered play therapy has been lacking because it is oriented around the child's needs, not the demands imposed by research. It has yet to be determined whether or not there is any relevance between the treatment outcome and the therapist's theoretical orientation.

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[1] Axline, loc. cit.

[2] C. R. Rogers, Client-Centered Therapy (Boston: Houghton Mifflin, 1951).

[3] C. R. Rogers, Counseling and Psychotherapy (Boston: Houghton Mifflin, 1942).

[4] Dell Lebo, "Research," Child Psychotherapy, ed. Mary R. Haworth (New York: Basic Books, Inc., 1964), pp. 420-430.

There has been increasing evidence that patients improve regardless of the treatment approach.[1] Suggestions have been made that the placebo effect may be operating in psychotherapy with children,[2,3] and that the heightened interest in the "patient" has been more potent than the particular procedure involved.

Summary

Early infantile autism has not been readily diagnosed, treated, or generally understood. Paradoxical behaviors, particularly in the areas of speech and language performance, have contributed to the perplexities surrounding the disorder. Etiological thinking and treatment approaches have remained essentially in the realm of psychogenetic hypotheses with a recent trend toward consideration of biological determinants. The crucial position that speech holds for understanding human behavior is well known. It was hoped, therefore, that the speech functions and receptive capacities of the children reported upon herein would provide some of the needed normative data which might ultimately aid in closing the gaps in our knowledge about autism in children.

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[1] Haim G. Ginott, "Research in Play Therapy," Child Psychotherapy, ed. Mary R. Haworth (New York: Basic Books, Inc., 1964), p. 431.

[2] Dell Lebo, loc. cit.

[3] Ginott, loc. cit.

CHAPTER III

PROCEDURES

The gathering of unusually extensive case study material for children thought to be autistic presented a significant opportunity to fulfill a vital need for comprehensive descriptions of children with severe emotional disturbance. The case studies developed herein, constituted a compilation of each child's life prior to his admission to the residential setting, Seaview, and a review of his behavior during his entire residency. In addition, a detailed account of six months of relationship therapy with these children was included and constituted a major feature of the case studies.

Description of Sample

The thirteen children studied carried one or more of the psychiatric diagnoses denoting the presence of early childhood psychosis; however, they were thought to be primarily autistic at the time of their admission to Seaview. For the purposes of this study, a child presenting a profound disturbance in oral communication was included in the sample whether he had been labeled atypical, autistic, symbiotic, and/or childhood schizophrenic. These diagnostic designations had been established prior to the child's admission to Seaview by highly respected psychiatric clinics and, additionally, in some cases by well-known authorities in the field of child psychiatry. All of the children included in the study were free from any obvious physical stigmata.

Fifteen children were in residence at Seaview at the beginning of the study (September, 1960). It was known that two of these children would not remain for the term of the experimental therapy. They were replaced by two boys who were admitted during a period of observation prior to the experimental therapy. Two other children were not discussed as their problems were identified clearly as predominantly organic in origin. One was a seventeen year old cerebral palsied girl whose mother was known to have had German measles during the first trimester of her pregnancy. The other child was a ten year old boy who manifest a receptive aphasia with an auditory agnosia and who was responding to aphasia therapeutics with the educational therapist. The identification of an aphasia was confirmed by four speech pathologists, an audiologist, and a pediatric neurologist.

Of the remaining thirteen children comprising the group studied there were two girls and eleven boys, ranging in age from four years and six months, to thirteen years and ten months. Their ages at the onset of experimental therapy are shown in Table I.

TABLE I

CHILDREN'S AGES AND LENGTH
OF RESIDENCY STUDIED

Child's Name	Age		Total Length of Residency Studied[a]	
	Years	Months	Years	Months
Timothy	4	6	-	9
Debra	5	2	2	7
Glen	6	4	1	11
Dennis	8	2	3	5
Ronald	8	4	3	7
Peter	8	7	1	1
Jonathan	8	11	3	8
Joe	9	6	3	3
Scott	10	3	5	7
Joel	12	9	7	1
Gene	12	9	7	1
Sandy	13	1	5	6
George	13	10	6	6

[a] From the date of admission to the termination of experimental therapy.

Pre-experimental Phase

The child's history prior to admission to Seaview.--As the institution's medical and psychiatric files were often limited to the correspondence exchanged at the time of the child's referral to Seaview, an exhaustive two-year effort was undertaken to obtain all possible information about the child's entire life prior to his residency at Seaview.

An inquiry form (Appendix A) was prepared and sent to the parents asking for pertinent information about themselves and for a review of the child's developmental history with particular emphasis on speech and language data. Further, the parents were requested to provide the research staff with the names and addresses of every professional contact that their child had had since birth. Upon receiving this data and the necessary authorization for the release of confidential material, each specialist, institution, clinic, school, or agency was asked to forward whatever information was available concerning their contact with the child. Highly detailed reports were received from the majority of respondents. When none was obtained, a minimum of three re-requests were made. Thus, from only primary source material, starting with the obstetrical record of each child's birth and including every obtainable account of subsequent professional contacts, a highly detailed case history was compiled.

The child's history while at Seaview.--During the ten months prior to the onset of therapy, the research staff engaged in a number of activities to comprehensively survey the child's behavioral status for this period and for the preceding years of his residency. In certain cases this represented up to seven years. (See Table I, p. 3).

Periodic conferences were held with the administrative staff and the consulting psychiatrist in order to obtain personal accounts of their observations and interpretations of the functioning of each child.

A reading of the institution's daily records of each child's behavior covering the full term of his residency was undertaken. These records had been submitted over the years by the administrative staff, the craft and music teachers, and the educational therapist. They principally included commentaries about the problems encountered in managing the child, the events occurring in the course of the day, any deviations in the child's usual behavior pattern, his health and physical status, and his responses to specific activity sessions.

Additional current information was obtained from the day and night attendants through frequent conferences.

The clinicians, acting as non-participant observers, made daily observations of each child in every possible dimension of his institutional milieu for the ten month pre-experimental phase. Concurrently, tape recordings of the speech or vocal behavior were made using a high fidelity tape recorder (Ampex, Series 600) and microphones (Electro-Voice, Model 654) which were installed in the educational therapist's room, in the craft and music rooms, as well as in the dining room, bedrooms, and play areas. These observations and tape recorded samples encompassed the child's entire day including periods when he was alone, with his attendant, teacher, therapist, or other children; when he was engaged in routine activity, "waiting" with or without play materials available, and at an occasional party. In addition, observations were made in outdoor play areas and, when feasible, at the beach or when the child was taken for automobile rides or walks. In each situation, notes were kept regarding the children's contacts with one another and the adults present, their use of equipment or materials, and generally their responses to and interaction with the total environment.

In the educational, craft, and music areas a one-way vision window was installed to facilitate viewing the children's behavior during sessions. These windows were constructed of two layers of ordinary window screening set into an existing door panel or between an opening cut through the wall of an adjoining room. As long as the observer's area was not lighted, it was a most satisfactory arrangement; but it did not permit any discussion about the child during the observation. Immediately following sessions, the observer dictated an anecdotal account. Thus, at different hours of the day and under conditions in which a variety of activities were occurring, the full range of the child's vocal output was gathered, together with a detailed picture of his behavior.

In an attempt to extend and supplement the research staff's observations, the reorganization and expansion of the institution's records were undertaken. Check sheets, rating scales, and forms for anecdotal records were devised which were used by the administrative and teaching staff. These forms were introduced to the day and night attendants whose experiences with the children had previously been only orally reported to the administrative personnel. Their value as research instruments was judged to be limited because administrative problems were encounted, a lack of sufficiently trained observers existed, regular training sessions were not feasible, numerous changes in staff occurred, the reports were frequently incomplete, and reliability of reporting could not be established. Thus, the effort to involve the institution's personnel in systematic data gathering did not reach fruition.

Experimental Phase

The rationale for relationship therapy.--A search of the literature for a therapeutic means to facilitate the growth of speech and language with a group of psychotic, severely nonverbal children had revealed that child-centered play therapy had not been reported. Only an occasional account of individual cases where client-centered principles had been used was available. A determination was made to provide child-centered therapy based on the rationale of relationship therapy as expressed by Moustakas[1] in the belief that each child's problems were psychogenic in nature, and that the diagnostic designations of atypical, autistic, symbiotic, and/or childhood schizophrenic were essentially correct. It was also assumed that the children studied had intact neurological systems and were not retarded as had been so vigorously asserted by Eisenberg and Kanner.[2] Further, it was hypothesized that the rationale of the client-centered approach would allow the child to reveal the nature of his problems and that the speech processes would unfold as a consequence of the relationship which would be expected to develop between the child and the clinician.

During the early months of pre-therapy observations and tape recording of each child, it had become apparent that a more structured, individual observational system was needed where the nature of the stimuli would not be as varied as within the institutional milieu. A need also existed to gather more tape recorded samples of the speech and vocal behavior of each child in a situation where ambient noise could be minimized.

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[1] Moustakas, loc. cit.

[2] Eisenberg and Kanner, loc. cit.

The design of the therapy-observation suite.--A second floor bedroom in a quiet corner of the building was adapted. It was divided by constructing a sound deadening partition with the larger segment designated as the therapy room. A three-foot by four-foot one-way vision mirror, encased between two ordinary panes of glass and set within a specially constructed window frame, was built into the partition. Protective wooden panels were fastened to the frame on hinges so that they could cover or expose the one-way mirror as needed. Acoustical tiles on the interior walls of the observation room and on the ceilings of both rooms, together with carpeting on the observation room floor minimized any sound transfer from the observation area to the therapy room. A self-ventilating cabinet for a tape recorder was installed high enough on the wall of the therapy room to be beyond the reach of the children. A microphone, cradled in Styrofoam, and a lamp were also mounted in an elvated position. Under such conditions and by operating the tape recorder at seven and one half I.P.S. high quality recordings were obtained.

The four windows in the therapy room had to be covered with quarter inch wire mesh screening in anticipation of their possible breakage. Three of these constituted a small bay window designed with a window seat. The only furnishings in the therapy room were a large sturdy table, two benches, and shelving beneath the one-way mirror. Ample storage space for the play therapy materials was available in an existing closet. A complete bathroom adjoining the therapy room afforded opportunity for water play. A list of the play materials is presented in Appendix B.

The organization of therapy.--The children were seen individually for half hour sessions three times weekly for six consecutive months by two speech pathologists, trained in play therapy techniques, who held advanced degrees in speech pathology and whose training was equivalent to the Certificate of Clinical Competency of the American Speech and Hearing Association. The thirteen children were distributed between the two clinicians, one male and one female, with regard for the physical limitations of the female clinician's capacity to deal with the more aggressive and violent children. The assignment of children to the male or female clinician and the total number of therapy sessions for each child are included in Table II.

The therapy room was used alternately by the clinicians. Systematic daily records of the therapy process were compiled by tape recording each session and dictating anecdotal accounts of all sessions. While a child was in therapy with one clinician, the other

TABLE II

ASSIGNMENT TO CLINICIAN AND
NUMBER OF THERAPY SESSIONS

Child's Name	Clinician		Number of therapy sessions
	Male	Female	
Timothy	X		68
Debra		X	65
Glen		X	44[a]
Dennis	X		68
Ronald	X		63
Peter		X	58[b]
Jonathan		X	70
Joe		X	67
Scott	X		69
Joel	X		60
Gene	X		57
Sandy		X	65
George		X	63

[a] Withdrawn in the fourth month of therapy.

[b] Withdrawn after the fifth month of therapy.

dictated an anecdotal account of the session just completed. As the children were not able to get to therapy independently and as none of the institution's staff could be released from their regular duties, the clinicians assisted one another in preparing or re-arranging the therapy room as well as in bringing the children to and from therapy.

Measurement of the therapy process.--A standardized play observational system and rating scales for untestable nonverbal children devised by Loomis, Hilgeman, and Meyer[1] was modified to accommodate the ranges of behavior which had been observed during the ten month pre-experimental phase.

The clinicians alternately acted as non-participant observers for one another. Using the one-way vision mirror, a continuous account of the child's actions and interactions with the clinician was dictated for the thirty minute session, while the speech or vocal behavior and any verbal exchanges between the child and the clinician were simultaneously recorded on tape. Initial, monthly, and final observations were dictated for a total of seven observational protocols. The objectivity of the observers' accounts were periodically checked for reliability of reporting by a speech pathologist and a clinical psychologist, functioning as independent observers. Observer reliability ranged from eighty-five to ninety-five percent.

Eight rating scales were developed using a six point continuum with the highest score, six, representing an approximation of normal behavior. These scales were devised to establish and compare the child's ability to relate and to measure any changes in his functioning prior to, during, and at the termination of the process of therapy. Each scale described the child's relationship to things and/or persons in the following domains of behavior: (1) motility, (2) behavior directed towards self, (3) behavior directed towards inanimate objects, (4) behavior directed towards clinician, (5) goal persistence, (6) mode of communication, (7) affective expression, (8) perception. Pre-testing the precision of the descriptiveness of each scale was accomplished prior to therapy. The scale for goal persistence was abandoned as there was a profound lack of observable goal directed behavior. Similarly, the scale for perception was deleted as judgments could not be made as to what the children perceived in the face of their gross unresponsiveness to external stimuli. The remaining six scales were refined and are presented in Appendix C.

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[1] Earl A. Soomis, Lois M. Hilgeman, and Lucille R. Meyer, "Play Patterns as Nonverbal Indices of Ego Functions: A Preliminary Report," American Journal of Orthopsychiatry, XXVII (1957), 691-700.

At the termination of therapy, four members of the research staff read the seven observational protocols for each child while listening to the tape recording of the sessions. They simultaneously rated each observation until consensus was reached. As the dictating machine used a ten minute magnetic recording disc, each session was divided naturally into three segments and provided an opportunity for comparison of intra-session behavior. Thus, for every observation, three scores were gained for each of the six scales.

Post-experimental Phase

The thirteen case studies have been individually presented in Chapter IV according to the chronological ages of the children. They have been divided into two groups, the first containing eight case studies of children who did not use any speech, and a second group of five case studies of children who produced some words.

In order to maintain anonymity, pseudonyms were assigned to each child and all data which would identify informants have been deleted. No other editing of quoted primary source material occurred except where repetitious information was reported.

The case studies have been divided into four major sections: (1) medical history, (2) residency at Seaview, (3) experimental therapy, (4) summary. (See Appendix D for a detailed outline).

Chapter V contains an analysis of the data gathered in the case studies showing features which were common to the group. Chapter VI is devoted to an overview of the entire study. The initial, monthly, and final ratings for each child on the six dimensions of relatedness are presented in Appendix C.

CHAPTER IV

IV-2

Case History of Tim

Date of Birth: 3/16/56

Family History

Tim was an adopted child. The following information regarding his natural parents was abstracted from the caseworker's report which was made prior to his adoption. Tim's natural mother, of Irish descent, had been employed as an office worker. She was twenty-two years old at the time of Tim's birth. The caseworker felt that she had a "nice outgoing personality" and probably had told the truth regarding the baby's father, although this information was never verified.

Tim's father was said to have been of Irish descent, good looking, with a very friendly outgoing personality. He was reportedly six feet tall, weighed one hundred and seventy pounds, was in excellent health, and "seemed to be of good emotional stability." It was reported that "he apparently did not have too much education" and that he worked in the trades.

There was no known mental illness reported in the background of either parent.

Birth Record

As the actual hospital record could not be released in this case, the following information was supplied by the adoption agency.

There were no reported difficulties or infections during pregnancy. Gestation was recorded as thirty weeks; labor was normal; the position was breech; and the delivery was spontaneous. No information regarding anesthesia was available. There were no postpartum complications noted.

The infant's birth weight was six pounds, ten ounces. His condition at birth was reported as "good" with no apparent birth injuries or congenital abnormalities noted. A circumcision was performed.

Upon leaving the hospital, Tim was placed in an infants' home pending adoption.

First Nine Months

The adoption agency provided a brief, factual account of the period prior to Tim's adoption. When he was two months old, he had a four day hospitalization for the surgical repair of a right inguinal hernia.

At four months, a psychologist administered the Cattell Infant Scale. Although Tim was quite unsteady and had not achieved control of his head movements, she considered him very alert and rated him better than average. When Tim was six months old, he was reportedly "sitting up without support and was almost completely weaned"; however, at this time a "regression occurred" which was felt to be related to moving Tim from the nursery where he had been since birth to another floor in the institution. He refused to drink from a cup and resumed a schedule of four bottles a day.

At eight months his weight was recorded as nineteen pounds, and his height as twenty-eight and one-half inches. It was noted that he had begun to crawl. He was given three bottles a day and ate well, but slowly. Attention was drawn to the fact that he cried during the night and was given a bottle whenever it was necessary.

During his first nine months he had no serious illness with the exception of an ear infection which was treated with Penicillin.

Adoptive Family History

The following background information on the adoptive parents was compiled from psychiatric and social work reports. Tim's adoptive father was born in the Midwest. He was the third of five siblings of a middle class, Irish Catholic family. He described his childhood as "normal and happy." After one year of college, he served in the Armed Forces for two years. After an honorable discharge he obtained a job with a large insurance company. A year later he met his wife and following a short courtship, married her. He reported that he was known for his good judgment and hard work and that he had had regular promotions in his position as an executive despite his lack of a college education. He was twenty-seven years old at the time of the adoption.

Tim's adoptive mother was also born in the Midwest. She was the fifth of six siblings of a middle class, Irish Catholic family. She described her father as "a wonderful person," who was a conductor for a large railroad. Because of his job the family had moved frequently to various small towns along the main line of the railroad. She also described her mother as "a wonderful person," who spent most of her time caring for the family and engaging in various civic activities. When her father was invalided by a paralytic stroke, her mother devoted all of her time and energy to her husband. Tim's mother stated that her older sister, who "knows everything" was also responsible for a good deal of her mothering and direction during her childhood. This sister was still the person to whom she would turn for guidance.

After one year of college, she was employed as a bookkeeper in a large company where she worked until she was married at the age of twenty-six. Unsuccessful in her attempts to become pregnant, she consulted her physician who advised her that she probably would get pregnant. At the end of three years of treatment for infertility, she called an adoption agency about the possibility of adopting a child. She was told that because it might still be possible for her to have her own child no adoption could be arranged at that time. She continued to contact the agency every six months. In the fifth year of her marriage, the agency notified her that an adoption had been arranged. She stated that she "felt on top of the world." On the day after the family moved into a new house they brought Tim home from the adoption agency. When questioned regarding her feelings about adopting a baby who was nine months old she stated that maybe she had wanted a younger baby, but the main thing was she had "just wanted a baby."

Nine Months Through Second Year

Immediately following adoptive placement Tim contracted a throat infection for which Penicillin was prescribed by the family physician. It was noted that Tim had a fever of one hundred and four degrees during the illness, but no marked changes in his personality were observed by the parents either during or following this episode. During the next six months he had chicken pox and measles; again, no marked changes in his behavior were reported.

The social worker reported that just prior to and following the adoptive placement Tim seemed to drool excessively, which she felt was somewhat lessened as his control of his head and neck increased. Although he could not sit up without support at nine months, his development progressed surprisingly well following his placement. Within a few weeks he was sitting without support. At ten months he walked with support, and at thriteen months he walked independently.

Tim's mother reported that he slept twelve hours nightly without waking. Shortly after the adoption he was weaned from the bottle to a cup. His mother stated that he ate everything very well, but that he did not want anything that had to be chewed.

During the first part of his second year Tim's mother reported that he screamed excessively when placed in a play pen. When he became overtired he had "temper tantrums" and would "kick and stiffen out." She felt that during these episodes she just "couldn't reach him"; however, she believed that her adopted son was developing normally. "I had nothing else to judge by." In retrospect, she recalled that a neighbor who had several children recognized his early deviancy and remarked that, "He seemed to be an extremely difficult child to raise and to understand."

Linguistically, Tim's parents reported that he used "dada" and "mama" appropriately, and developed a vocabulary which included a number of common objects and finally phrases such as, "Daddy ni ni airplane," or, "This is a no no." He reportedly was able to give his full name upon request and could count from one to seven. He knew a number of rhymes and songs. Although his parents reported that he did not respond to loud noises, he attended to the word "no" and they felt that he generally understood when they spoke to him.

The supervising caseworker for the adoption agency made the following report regarding the family situation when Tim was twenty-one months old and had completed one year in his new home.

> "Before this adoption was finalized the mother found she was pregnant. She seemed quite happy about the pregnancy; however, she did not spare herself with respect to the care of Tim. She carried him about and seemed determined not to 'baby' herself in any way. Tim seemed very happy with the family and they with him. . . . He seemed to be completely accepted by the entire family. The couple were very proud of him and seemed to be parents in the real sense of the word. . . . Tim continued to develop and he seemed quite secure at the end of our year of supervision."

When Tim was 2:2 his younger brother was born. His parents reported a marked change in his behavior at that time. During his mother's three day confinement, he was cared for by his maternal grandmother who reported that he spent hours sitting on his rocking horse, rocking. Tim's mother felt that she could not bear to be away from her adopted son and her husband, and after three days left the hospital against the doctor's advice. She hired a practical nurse to help her in caring for the baby. She stated that when she came home she found Tim completely changed. Although previously reported to be a good sleeper, Tim now refused to go to bed. Instead, he would attempt to stay up and "entertain" his parents and any guests. In an effort to placate him his mother would take him to bed with her, but it was not until the early morning hours that he would finally fall asleep.

Tim began to retain his bowel movements and, according to his mother, "No amount of urging could make him perform properly." Instead, he would "secretly" go off by himself to deposit his bowel movements wherever he pleased. He was also becoming increasingly aggressive with his playmates and would be sent home frequently because of fights with other children. In another attempt to control the situation his parents began to lock him in his room; however, this led to marked anger and destructive behavior as he would scream and "tear apart" his room until he was released. During this period his speech became completely unintelligible in the daytime, although at night when he was alone with his parents, he purportedly demonstrated his prior verbal ability.

Adding to this turmoil, the new infant became ill with a high fever and an asthmatic cough. The mother reported that she had been told to "hold him constantly," and became fearful that if she did not do this he would not be able to breathe. Frequently, she would be up until the early hours of the morning holding the infant, and would fall asleep while lying on the living room floor. During the baby's third month his health improved and his mother was able to spend more time with Tim; however, when Tim's brother was five months old he was hospitalized for asthmatic bronchitis. During this interval Tim was cared for at home by a maternal aunt and suddenly, according to the parents, he again showed the level of development he had reached prior to his brother's birth. But, when his brother returned, Tim reverted to the same behavior he had shown previously.

It was reported that the relationship between Tim's mother and father became strained during this time. His mother felt deserted during the week when his father was away on business trips.

In her anxiety regarding Tim's brother, she consulted a pediatrician who told her that Tim was the one to worry about and not the infant. With this admonishment to "leave the baby alone," she began to spend more time with Tim; however, his problems had increased. He had begun fighting more and more with the neighborhood children. On one occasion after a tussle with the little girl next door, he was slapped by the girl's mother. Upon seeing this, Tim's mother went next door and slapped the woman, whereupon the little girl and most of the other neighborhood children would no longer play with Tim. His mother felt that this ostracism was her fault and that it had much to do with Tim's subsequent behavioral deterioration. Without any friends, Tim spent most of his time sitting by a sewer in front of the house, dropping and throwing stone after stone through the grating, seemingly very much absorbed in the task. When Tim was involved in this activity he would not answer his mother when she called to him and she would have to go directly to him in order to gain his attention.

When Tim was two years and nine months old, his father received a promotion and was transferred out of state. The family set up housekeeping in a four-room apartment in a middle class housing development. His parents reported that for months after their move, Tim would stand at the window of his room before falling asleep at night, supposedly chanting in a mournful voice, "Go home, go home."

When Tim was two years and eleven months old his family sought a consultation with an internationally renowned pediatrician.

Pediatric Evaluation

> ". . . When I saw him he was hyperactive, wandering about the room, turning on the lights, etc. He said sentences but did not converse.
>
> "His parents said he was affectionate but to me he seemed remote. He screamed several times in an annoying way and is said to have tantrums.
>
> "His sleep is poor and his food intake limited to a few foods. Recently he has returned to the bottle.
>
> "The physical examination was negative except for a rather large head. He seemed intensely anxious all the time he was with me. His mother seemed tense and anxious also.
>
> "Impression.--My impression was tense, anxious, hyperactive child. Possibly schizophrenic."

Although the parents were asked to return with Tim in two months, they did not keep the appointment.

Third Year

During the early months of Tim's third year his condition continued to concern his parents. They became aware that he had never talked to other children in the neighborhood, but instead had played with their toys. Eventually he would become involved in a fight with them and, without defending himself, would retreat to his mother. According to his parents his use of words continued to decrease during the day and even when he was alone with them in the evening, although when he was in bed he purportedly would still sing songs, enunciating words carefully.

When Tim was three years and three months old the family took a vacation trip to visit relatives. He cried violently and uncontrollably when they attempted to leave him with these relatives With little provocation he would have temper tantrums where he would lie on the floor, violently kicking and screaming. Because of his asocial behavior and the rapid degeneration of his speech, his parents became so alarmed about their son's condition that they sought help from a child guidance clinic in the community where they were vacationing.

Pediatric Evaluation

"The physical examination was almost impossible to accomplish. Tim spent most of his time jumping up and down in a very peculiar dance, holding on to a small piece of paper and going through a very ritualistic performance with the paper. He would also turn the faucet on and watch water run down and out the sink in a fascinated fashion. He has practically no interpersonal relationships. It was not only difficult to examine the child, it was difficult to get the parents far enough away from him to attempt to examine him. We felt that his general health was good and we could spot no specific neurological difficulties, although we realize the physical examination was not as detailed as we would wish."

Psychological Evaluation

"Formal testing could not be accomplished because of the child's constant perseverative and repetitive behavior. He seemed to be aware of his environment in terms of physical objects and he could perform functions of self help such as feeding himself, partial dressing, executing some commands, etc. In the testing situation the parents were quite tense. The father dominated the situation and frequently corrected or revised his wife's comments.

"Impression.--This boy's intellect was probably normal, although specific testing could not be done."

Laboratory Report

"A routine urinalysis was done and was negative. Skull x-rays were negative."

Electroencephalographic Report

". . . Impression.--Because of the somewhat irregular form in the background activity, this record is considered to be borderline normal for this age."

Psychiatric Evaluation

". . . Impression.--This was a child showing marked autism with no evidence of brain damage or mental retardation.

> "Recommendation.--Further psychiatric investigation and treatment."

After returning home from their vacation, Tim's parents reported that the intensity and frequency of his rocking increased. There was reportedly a marked upsurge in his "aggressive" and destructive behavior, and a "regression" in toilet training to the extent that he was soiling on the floor and smearing his feces. His speech had entirely disappeared. His parents reported that he had become increasingly involved in a ritualistic dance.

When Tim was 3:8, he again presented otitis media and was treated by the family pediatrician.

The following month the family sought further psychiatric assessment.

Psychiatric Evaluation

> ". . . His behavior was similar to that seen in autistic children. He sucked his right thumb, he paid little attention to me. He would begin to play with various toys and drop them. He would jump up and down. He would continually climb in and out of the baby carriage. At times he sat in my lap. He babbled incoherently. Occasionally he said what I thought was 'Mommy' or 'Daddy.'
>
> "Impression.--I interviewed the parents the following day and said that, in my opinion, the boy showed symptoms of childhood schizophrenia and needed intensive treatment.
>
> "Recommendation.--I gave the parents the names of several places where such children were treated. . . ."

Following the recommendation of this psychiatrist, Tim's parents arranged to have him seen for diagnosis and evaluation at a large urban hospital when he was three years and eleven months old.

Intake Evaluation

> "The patient was brought to the clinic by his parents after they were told by the referring physician that their child was suffering from 'childhood schizophrenia.'

"On examination the father appeared to be a tall, intelligent looking, well groomed, alert, somewhat tense man, who appeared his age of thirty years and who spoke directly and with forthright manner to the interviewer. He appeared concerned about his child, but was unwilling at first to accept a diagnosis of severe emotional disturbance in his boy. Throughout the interview with his wife he remained in charge of the interview situation. During this time he held Tim on his lap and when he put him down continued to direct his behavior and admonish him frequently whenever he felt that the boy was becoming somewhat boisterous and ill-behaved. In describing the boy's behavior, he appeared to minimize any indications of emotional disturbance and talk at great length about his child's illness on the basis of treatment which Tim received prior to his adoption at nine months, and inconsistencies in his handling since that time.

". . . The mother is a short, pleasant-looking woman who appears older than her husband. Each time she was seen she began the interview smiling and occasionally laughing, but when she began to relate aspects of Tim's development which she considered to show that he was disturbed, she rapidly became tearful. Her speech was clear and coherent and she was able to use a varied and adequate vocabulary to describe her son's behavior in an accurate way. Her emotional reactions were quite labile. She was greatly concerned over the part that she and her husband might have played in Tim's illness and expressed much guilt over this aspect of the problem. She appears to be of at least normal intelligence and genuinely interested in help for her child.

"Interview with Child.--When first approached, Tim was sitting quietly sucking on his thumb alongside his father, leaning up close to him, and staring absently around the waiting room. He was dressed immaculately and stylishly but appeared to have a dull, almost dazed expression on his face. He came rather readily at first with his parents to the interview room, but halfway there began to lag and had to be urged by his father to walk. On entering the examination room Tim remained standing between his father's knees and seemed unconcerned about the conversation between the examiner and the parents. After approximately five minutes he left his father and began to examine several small toys on the examiner's desk. He picked up a piece of plain white paper and began waving it back and forth in a sagittal plane in front of his face while performing the same kind of movement with his entire body. At one point he came in front of the examiner and stood with his back towards him. He was easily induced to sit in the examiner's lap, at which time he formed a rather lifeless bundle appearing to conform exactly to the outline of the examiner's body without any sense of muscle tone separating him from the examiner. He soon became involved in climbing on top of the desk, mumbling some incomprehensible phrases in response to no observable external stimulus, and climbed about on the window sill until his play became so unrestrained that he had to be stopped by the adults in the room. At no time was any intelligible speech heard nor did he make appropriate use of any of the various play materials which were at his disposal, instead preferring to climb or play with a sheet of paper. At the end of each of the three interviews he appeared willing though not especially overeager to leave the interview situation and with a moderate amount of squirming was dressed by his mother and left readily with her.

"Home Visit.--The family lived in a four-room apartment in a middle class housing development. The apartment is well furnished and is amply decorated with various Catholic religious symbols. Tim and his brother share a moderate size bedroom diagonally across the hall from the parents' bedroom. Tim sleeps in a low children's bed and his brother sleeps diagonally across from him in a crib. When the examiner reached the apartment, the mother answered the door dressed neatly in a cotton dress protected by an apron. On entering the apartment, Tim immediately looked up and appeared to recognize the interviewer. The interviewer then sat down on the living room couch and Tim sat in front of him watching a children's program on T.V. At this point the younger sibling tried to enlist the interviewer's help in operating a mechanical train. When the interviewer was engaged by Tim's brother there was no apparent change in Tim. When the time for Tim's favorite T.V. program arrived, he mounted his rocking horse in front of the television set and began rocking in a rhythmical manner, sometimes slowly, sometimes violently bouncing up and down on his horse. The changes in his rocking could not be correlated with any changes in the program or the environment in the room. He remained on his horse throughout the program, interrupting his rocking only once when the examiner and his mother left the living room to go to his bedroom. The mother's interpretation of this interruption was that Tim wanted to see if he could overhear what the mother and the examiner were discussing, and she predicted accurately that as soon as he discovered that he could not overhear their conversation he would resume rocking, as he did. In one corner of Tim's room, lying dismantled, was a rocking horse which the mother said he had 'just worn out' with constant use. She stated that before she could get the boy another horse he became markedly agitated and appeared unusually sad. Before leaving the house at the conclusion of the T.V. program Tim dismounted his horse and played in front of the examiner with his back to the examiner. He allowed himself to be drawn onto the examiner's lap and again displayed the same postural tone as he had before. When it was time to leave, the examiner said goodbye to Tim and told him that he would see him again in several days. While saying goodbye to the mother, Tim looked up with a sad facial expression and walked over to his mother constantly looking at the examiner. Tim's mother remarked that she felt the boy did not want the examiner to leave and she felt that he had established a relationship with the examiner which was unusual for her son. When the examiner left the boy was hugging his mother tightly again with a sad look on his face."

Neurological Examination

"There was a head circumference of fifty-three centimeters which was in the 75th to 90th percentile for a six year old. His height was forty-five inches, his weight was forty-four pounds. He generally seemed to have a blank expression, and his sensorium could not be adequately tested. Because of very poor cooperation for the examination a complete neurological was not done. The reflexes showed a questionable decrease on the left side, but due to his movements, this could not be ascertained definitively. Cranial nerves on gross examination appeared to be intact. Sensory examination could not be evaluated because we could not determine whether the boy did not feel the pin prick or was just not communicating."

Electroencephalographic Report

"The child was sedated with Thorazine and slept during most of the recording. It showed the usual amounts of slow activity without focal or lateral signs. During drowsiness some paroxysmal 3 to 4 per second activity is seen. The impression was of normal sleep record for the age."

Physical Examination

"A blond well-developed boy with a blank expression on his face. Heart sinus arrhythmia with a grade I-II systolic murmur which was thought to be functional. Thumb nails were badly bitten. Remainder of examination normal."

Psychiatric Conference

"Diagnosis.--Tim was presented to the members of the child psychiatry staff. It was felt that he was a symbiotic child with secondary autistic features, who had suffered greatly from the singular experiences which he had during the first nine months of his life. It was felt that he was psychotic at the present time. A recommendation for long-term daytime treatment as opposed to residential placement was made to obviate the parents' reluctance to separate from the child."

Fourth Year

Referred by the hospital, the family began treatment at a children's center where Tim was included in a research project for the study and treatment of symbiotic psychosis. In this project the treatment approach was that of including the mother and the child as a symbiotic unit. The psychiatrist saw Tim and his mother simultaneously.

Psychiatric Assessment

> "To the therapist Tim presented the picture of a child with no relationship to the world around him. He did not seem to take in or comprehend what was said to him, although in the course of treatment there were many indications that he did understand what was said to him. He showed no interest in toys of any kind. If he picked them up at all, it was only to mouth them. He had a peculiar interest in sticks and would tear paper into long strips. His refusal to play with toys seemed directly connected with his younger brother. His possessions became useless when his younger brother had touched them and he would never go back to them again.
>
> "Music and singing sometimes had a soothing effect on him but he never tried to sing himself. Certain kinds of food had a consoling effect, particularly root beer which was ever present and which he demanded as soon as he came to the center. He would never touch a regular meal, but just pretended it did not exist. The daily supply of snacks seemed to have been the only pattern of sameness that was meaningful to Tim.
>
> "At the center, Tim at first seemed to be in a state of almost continuous panic. He showed only one desire and that was to leave. He showed similar behavior at home and was quieted by being taken to the playground. It was suggested that the therapist had too rapidly intruded herself on Tim and that he was in panic because they had gone too far in the relationship. The history indicated that during the first nine months of Tim's life he must have had at least nine mothers and that having been an attractive infant, he had received much fleeting affection from many different people. The worker, therefore, became more reserved, and the crisis passed almost as suddenly as it had come. Tim regained confidence and no longer was afraid. He became attached to a toy for the first time, and began again to show desire for physical contact. With the help of the therapist, Tim began to be aware of his bowel and bladder functions, became more regular, began to urinate in the toilet and was willing to sit on the toilet as well. However, the mother's interest in this could not be enlisted.
>
> "The mother, a pretty woman, always immaculately groomed, was rather conventional and very concerned with appearances and the outward aspects of life. She was immature and impulsive. Her guilt and ambivalence around placing Tim were such that she was unable to involve herself with the therapeutic aspects of dealing with her relationship to Tim. She was helped to examine her own ambivalent feelings about placement. She admitted her inability to be with Tim as an effort to

escape her awareness of his conditon.

"A number of problems related to Tim were brought up in reference to her own child. She was faced with the very real problem in the feeling that she was neglecting her own child for the sake of one who was not her own and who demanded her almost continual attention. She was unable to set limits on the child's demands and either gave in completely, or lost control. She manifested a tendency to project blame, tended to be suspicious of those with whom she deal and could show extreme hostility.

"As Tim came out of his autistic shell, he became more jealous of his brother and demanding of the mother, as, at the same time he began to repeat at home the name of his therapist. This growing responsiveness and awareness of Tim's was openly expressed by the mother as a threatening development because of her inability to tolerate Tim's demands.

"The father also was extremely ambivalent about placement expressing for the most part his desire against this. Since his work necessitated his traveling and being away from home, this caused the dependent mother to become periodically upset, angry, and depressed in regard to her husband.

"In the simultaneous treatment of the mother and child as a symbiotic unit, the mother was, despite her suspiciousness, very cooperative. Though she was faced with many difficulties such as living far away, having a baby at home, being alone much of the time because of her husband's absence, she never missed a session. She tried to observe carefully, but these observations were often limited by her impulsiveness, her immaturity, and inconsistency.

"At one point she resolved her conflict with the help of her husband in favor of keeping Tim, a decision partly seen as dictated by the Church, but with a crisis her 'decision' would be shaken.

"During the summer vacation away from the center, Tim became so difficult that the mother called the adoption agency, who was extremely disparaging in regard to psychiatry and was thus able to enlist the mother's hostility against the center and he was therefore withdrawn in the fall. Actually, this appears to have been a reflection of the mother's desire for placement."

Tim's parents stated that they withdrew him from the program of psychotherapy because they felt therapy was upsetting him. They stated, "There was too much talk and action about stools and potty," not to mention the cost of the program.

The following month, when Tim was four years and seven months old, his parents returned to the psychiatric clinic of the large urban hospital where he had been seen eight months earlier. For the following four months, Tim was placed in their day-care service as he had become increasingly difficult for his mother to care for at home. They reported:

> ". . . Each day the mother would bring Tim and there would be much difficulty in separation. He stayed by himself and jumped, walked, and rolled about as his inner needs dictated. He disliked loud voices and large rooms. He could make no use of a nursery school situation. At times he would scream for unknown reasons for a long time and could only be calmed in a warm tub bath. He became ill several times with fevers and then he was admitted to the in-patient service for a few days. We found that he quieted down when his environment remained constant. Eventually he was admitted to the in-patient service permanently pending transfer to a school."

While in the hospital's care, Tim presented presistent swelling of his right knee. On one occasion this was accompanied by a temperature of one hundred and three degrees. Extensive laboratory tests were made with negative findings. The following report was made:

> ". . . The cause of the joint swelling remained unexplained. The following diagnoses have been considered. Tuberculosis, acute rheumatic fever and rheumatoid arthritis. However, no evidence for any of these were found. . . . The consensus of thinking was that the swelling was due to trauma but that the other possiblities must still be kept in mind. . . ."

Admission to Seaview

When Tim was 5:1 he was admitted to Seaview for residential care.

In Seaview's pre-admission questionnaire his mother provided the following information regarding his status. Tim was not toilet trained and was enuretic. He had no known food allergies and ate well if he liked the food. He required complete assistance in dressing and undressing. He was usually put to bed around ten o'clock but he would not fall asleep for sometime. His mother considered him extremely hyperactive. He had had many colds, sore throats, and ear infections.

Psychiatric Consultation

One week after Tim's admission to Seaview, the consulting psychiatrist made the following report:

> "I first saw Tim when he was being given supper. He ate almost voraciously and gave every indication of enjoying his food, reaching out for more with his plate.
>
> "On first glance he appeared thin, almost emaciated, pale, and hollow-eyed. During supper he smiled frequently and responded when I spoke to him or smiled at him similarly.
>
> "When he had finished his milk he said something which sounded like, 'All gone, milk,' and once, rather dreamily and with no apparent stimulus, he looked at all of us and said something which sounded very much like, 'All gone, baby.'
>
> "Later, I saw him alone in the playroom for awhile. This was just after supper and he accompanied me readily, smiling and seemed quite willing to remain in the room not attempting to leave. He played peripherally around me, could not be persuaded to play with the crayons and drawing paper, although, when these were offered, he tore a strip of paper, turned it into a sort of conical shape and waved it around in front of him as he moved about the room, just as described in previous notes.
>
> "He had a most peculiar gait. He thrusts his head forward with shoulders markedly sloping, and moved about, extending his head before him, slightly bent. He said many things during the time he was in the playroom which sounded very much like words and seemed to be a kind of jargon which was repeated. The most frequently being in a sing-song manner 'aw-ca-pow,' sometimes varying this with 'aw-ca-powee.' When I repeated these phrases he would readily smile and say them again. Although he moved toward me several times, when I slowly moved toward him and attempted to pick him up, he withdrew quickly and slipped out of my arms. However, later he smiled without moving at my touch and gestures of affection.
>
> "Impression.--Tim appears markedly autistic, manneristic, posturing and compulsive. Question: Infantile Autism? Childhood Schizophrenia? Atypical Child?"

Residency at Seaview

The following outline of Tim's behavior in the milieu of Seaview was compiled from the direct observations of the research staff and an examination of the school records covering his first eight months of residency. (5:2 - 5:10)

Activities of Daily Living

Eating.--Tim's appetite varied from meal to meal. At times he was ravenously hungry, wolfing his food; on other occasions, he was picky or refused to eat anything. He preferred dry cereal and would consume two or three bowls at one sitting. Tim did not like to be fed by adults. He was able to use a spoon to feed himself; however, the use of his fingers was predominent. Because of his grabbing at food and his tendency to climb over the table, it was necessary to feed him in isolation. He ingested great quantities of nonfood material such as pine cones, rotting leaves, and scraps of paper.

Sleeping.--Tim slept soundly ten to twelve hours nightly. It was rare when he did not wet his bed during the night. Bowel movements in bed occurred two to three times weekly.

Toileting.--During this period Tim had a persistent toileting problem. He never gave any sign that he needed to toilet, defecating and urinating as the need arose. Because of the loose consistency of his bowel movements, which occurred three to six times daily, he required frequent baths along with complete changes of clothing.

Dressing.--His extreme hyperactivity made it most difficult to dress him. He was completely unconcerned about wearing clothes, and provided no assistance to those dressing him.

Motor Behavior

Thumb sucking and the oral manipulation of objects were a prominent part of Tim's stereotypic activity. He exhibited an all-consuming need to keep at least some part of his body in motion. He rarely used a normal gait even though he was capable of one. He tended to rock or hop even when running. Often he would carry a long piece of paper in front of him shaking it like a whip, while rocking forward and back by bending at the waist. If a piece of paper were not available, he readily substituted string or a long flexible stick. The only playground equipment which he was observed using was the swing; however, even here, he continued to be preoccupied with the shaking of a piece of paper, rarely actually swinging but using the swing only as a seat from which he could rock. When a rocking horse was available in the playroom, he would sit for hours seemingly content just to rock.

He was able to ascend stairs with alternating feet but descended one at a time. He had a proclivity for climbing on bedroom dressers and bathroom fixtures.

He was unable to participate in any way in the activities at Seaview. Efforts to interest him in educational play materials were unsuccessful because of his lethargy and preoccupation with introcentric activity.

Linguistic Functioning

Tim produced streams of vocalizations much like an infant's endless hours of practising babbling; however, his vocal productions were richer than those of an infant in both quality and quantity. Vowels and consonants were clearly articulated. A noticeable deficiency was the total absence of the sounds of consonant blends, sibilants, and fricatives. His voluminous output seemed to function only as the expression of an inordinately strong need for oral gratification.

Asocial Behavior

The complete absence of social learning pervaded all areas of his daily living. This, combined with his extensive jargon, extreme orality, the peculiar nature of his ambulation, and the prolonged periods of rocking made him appear handicapped, infantile, and inaccessible.

Response to Frustration

Two primary sources of frustration were clearly identifiable. Tim responded with an exhibition of rage to any interference with his drive to eat or his freedom of movement. This occurred daily and was usually accompanied by violent outbursts of screaming, shrieking, and kicking.

Response to Envirnonmental Change

When Tim's environment remained relatively stable he exhibited fewer rage reactions; however, during periods of constant change in his routine he became cranky, fussy, and difficult to manage.

Response to Children

Tim avoided other children. When they came near him he would move away. If another child aggressed against him, he withdrew defensively and was never observed retaliating.

Response to Adults

Tim was generally passive and pliable to the physical manipulations of adults; however, when adults interfered with his freedom of movement he responded with rage. For a five year old, he sought an inordinate amount of affection from adults. He would cuddle and cling to any adult who allowed it. Unfortunately, he usually smelled so of urine and diarrhea that he was often distainfully rejected by adults.

Health and Physical Status

From the very first day of his arrival at Seaview Tim had gastrointestinal disturbances manifest in a persistent and continuing case of diarrhea. He was especially prone to upper respiratory infections with the accompanying discharge of nasal secretions. He had numerous minor ailments: rashes, scrapes, scratches, and insect bites. When these complaints were added to his digestive problems, he rarely had a day free from physical discomfort.

Immediately prior to the period of experimental therapy, Tim's height and weight were recorded as forty-seven inches and forty-five pounds. (5:4)

Pediatric Neurological Consultation

During the course of therapy, a consultant to the research staff observed Tim and felt that although a gross neurological examination revealed no abnormality, his excessive salivation could be viewed as a symptom of a possible subcortical pathology.

In the sixth month of experimental therapy Tim was taken to the local pediatrician because of weight loss, pallor, and the presence of undigested matter in his persistent diarrhea. The report of this examination was not available. Seaview's Administrative Director stated that it was the pediatrician's impression that Tim's digestive upsets were due to his indiscriminate ingestion of nonfood material. Efforts to control the diarrhea through preventing his ingestion of these items and placing him on a controlled chopped food diet were not successful.

Experimental Therapy

At five Tim was a pathetic looking child because of his downcast eyes, lack of affect, and wan complexion. Despite his blond hair, blue eyes, and fashionable clothing, he gave the appearance of a forlorn waif. He was completely absorbed in oral eroticism and hyperkinetic activity, severely limiting his affective contact with the people in his environment.

He was assigned to the male clinician. During the sixty-eight sessions of experimental therapy he produced no meaningful speech whatsoever; however, an almost continuous stream of infantile babblings and jargon poured forth.

Tim received 30 mg. daily of the tranquilizer Chlorpromazine Hydrochloride (Thorazine) during the course of therapy.

First Month (1st through 13th session)

Tim's behavior in the initial session established the pattern for the ensuing weeks and months of therapy. Immediately upon entering the room, he took hold of the rattle and did not abandon it until the moment of his departure. He mouthed, licked, chewed, and sucked its parts with only momentary interruptions to tap it against the floor, walls, window seat, and furniture. He seemed delighted with the rattle as he began to hop about the room. With his legs held closely together and thrusting his buttocks outward, he bent forward at the waist with his head stretched upward and with the rattle handle held in his mouth, hopped over to BoBo, the puncho toy, giving it a hug. The puncho was then knocked down, patted, poked, and tapped. There was no let up in his oral manipulations of the rattle as he shoved BoBo around. He pushed it to the floor, straddled it and commenced to rock. After a few moments of rocking, he slid off BoBo and hopped about the room, but quickly returned to tap BoBo with the rattle.

Even though he could use a normal gait, he seemed to prefer his jack rabbit mode of propulsion. Another aberrant mode of ambulation was a stylized form of rocking which looked like a variation of his hopping. He would move forward with mincing steps, bending at the waist with his buttocks thrust outward, and bob up and down. Usually he would hold the rattle or some other favored toy directly in front of him at the midline of his body. In this bent position he would rock about the room constantly transferring the toy from one hand to the other and tapping it against the floor or anything else within his reach.

With only momentary pauses in his motility, his orality continued unabated. When he stopped hopping or rocking, he might attend exclusively to the oral manipulation of the rattle. He would perhaps increase the already voluminous output of jargon, or simply pause to look about the room or at the clinician. From time to time he might smile at the clinician who was sitting on the floor, imitating his vocal output or describing his behavior. Occasionally, he would stop all movement and vacantly gaze off into space for five or six seconds or, with a slight flutter of his eyelids, dreamily close his eyes. When he opened his eyes it was always accompanied with the raising of his eyebrows. If it had not been that his eyes were downcast and lacked expressiveness, his frequently raised eyebrows would have given him a perpetually surprised expression.

Tim's vocal productions consisted of a variety of reduplicated phonemes interspersed with laughter and giggles. While vocalizing, he would frequently cup his hand and place his fingertips against his cheek with his palm facing his mouth. It could not be determined what the function of this peculiar positioning of his hand signified except that the sounds that he made were being redirected to his ear.

With a broad grin on his face for a brief moment, Tim hopped over to the clinician and gave him a quick, firm hug in the same way that he had hugged BoBo. Returning the affectionate gesture, the clinician discovered that Tim was quite a soggy little boy. His dripping saliva had soaked his shirt and although he wore protective rubber pants over two pairs of underpants, this prevented neither his trousers from being soaked nor puddles of urine from collecting on the floor. Tim's behavior had given no sign or signal that he had had to urinate.

As Tim was unresponsive to the clinician's verbalizations regarding the termination of the first session, it was necessary for the clinician to carry him from the therapy room. When he was picked up he threw his arms about the clinician's neck and affectionately nestled his head on the clinician's shoulder. The affectionate quality of his interaction tended to belie the interpretation that he was resistant to leaving therapy, but rather that the clinician's exhortations and explanations of the limits of the therapy time were not understood.

Only minor variations in Tim's orality and hyperkinetic behavior occurred during the first month. He quickly recognized the clinician as a source of affection. He continued to interrupt his stereotypic play for brief exchanges of affectionate contact. While Tim hopped or rocked around the room sucking one of the toys, there were no possibilities for the clinician to reflect his feelings because his play was devoid of themes. A semblance of meaningful play was seen in one session when Tim briefly kicked a ball around the room and chased after it.

In the first few sessions whenever the clinician spoke, Tim would look at him. It was clear that he attended but he gave no indication that he comprehended anything that the clinician said. When the clinician imitated his vocalizations he would look at the clinician with a quizzical expression on his face; yet, he often displayed a puzzled look without any external stimulation.

Tim's endless productions of speech sounds were rich in variety. Rapid shifts in volume, pitch, and rate often gave his vocalizations the quality of actual speech to the extent that, with a slight stretch of the imagination, he sometimes sounded as if he were actually forming words. Varieties of phrasing and rhythm patterns gave the listener the impression that he was perhaps holding a conversation, but in a foreign language. The entire effect was remarkably similar to normal speech but totally without symbolic function. The only identifiable purpose for his vocalizations seemed to be the autoerotic stimulation which they provided.

In the clinician's efforts to discover possible modes of communication, many attempts were made with the exclusive use of gesture. Tim repeatedly ignored a simple beckoning gesture unless it was accompanied by some verbalization. After many trials substituting a variety of words it was found that it did not matter what was being said, just as long as the clinician spoke to him. Under these circumstances the auditory cue functioned as the attention getting mechanism and the direction was provided through the gesture.

The primary mode of communication was through body language. That is, the clinician was able to communicate acceptance by responding fully to Tim's manifest need for affection. An atmosphere of tranquility and safety was provided by tender and relaxed handling. Gentle manipulations were used only when required in order to set limits. Tim did not understand the time limits of the therapy sessions but passively accepted the clinician's manipulations used to guide him to and from the therapy room.

Tim continued to be incontinent of both urine and feces. Large portions of many sessions were completely consumed with changing his clothing. Often, he arrived for therapy with his pants soaking wet or filled with a loose bowel movement. This in no way deterred him from pursuing his stereotypic play. He gave no indication that he was experiencing any discomfort even though his buttocks and genitals appeared red and raw. It was not possible to anticipate his bowel or bladder needs as his behavior had yet to provide a sign or cue when he needed to toilet. It was only when his protective rubber pants failed to contain his excrement or because his feces had such a powerful odor that the clinician was able to identify Tim's need to be changed. While he was being bathed and changed, he was completely disinterested and passively acceptant of the clinician's efforts. Whatever toy he had been mouthing would accompany him into the bathroom. There was no cessation in his oral manipulations. If his hands were otherwise occupied he would hold the toy in his mouth. In the midst of all of these activities, whenever the clinician bent down to pull off his trousers or shorts, he would invariably grab the clinician around the neck and hug him. Over the entire course of therapy with the numerous times it was necessary to change Tim, his bowel movements always had the composition, consistency, and odor of diarrhea.

Variations in Tim's energy level were noted in the relative intensity of his stereotypic play. On some days his behavior was marked by a generalized lethargy, but only in contrast to his severe hyperkinesis. At times he seemed especially listless as he would sit on the puncho toy, rocking quietly and staring off into space. His vocal output also diminished during such periods. Regardless of the amount of energy available for his stereotypic play, it appeared that his primary need outside of food and rest was to keep himself and his world in constant motion.

He achieved maximum stimulation through his incessant rocking on BoBo while he manipulated a toy in his mouth. He attempted to orally incorporate all the available play materials. Accordingly, he usually selected the first toy he could fit into his mouth as the "toy of the session." It varied from day to day; one day it might be the rattle, another day the rubber squeeze toy, a nursing bottle, or the pacifier. Everything was explored orally, including BoBo's nose which he succeeded in getting into his mouth in its entirety.

The strength of his drive to keep things in motion was cogently demonstrated when he would come to therapy with some object that he had been using in the play yard. He would arrive clutching a length of string, a short branch, or a long piece of paper, which he would shake before him. He seemed to favor a piece of paper at least two feet long. By crudely folding it some semblance of rigidity was provided, facilitating his hold on it. Most objects were held in a pincer grasp with his fingers held closely together functioning as a unit, and his thumb in opposition to his forefinger. His motility had assumed a distinct pattern as he repetitiously paced back and forth, bobbing up and down, in a restricted segment of the room remaining close to the wall.

A characteristically infantile pattern of behavior was seen on the stairs on the way to and from therapy. He mounted the stairs with alternating feet, but sat after three or four steps and extended his arms to be picked up. Once at the top of the stairs, he would wander aimlessly about unless led directly to the therapy room. When descending stairs, he cautiously clung to the clinician or placed both hands on the rail and moved slowly downward one step at a time. Even though the clinician encouraged independence, Tim often wanted to be carried downstairs also.

Second Month (14th through 25th session)

It was necessary for the clinician to take Tim from his group or the play yard and personally guide him to the therapy room. Tim would invariably be found preoccupied in his stereotypic play. Well within his visual range, the clinician would call to Tim. One could see the expression on his face change from his usual downcast vacant look to one of delight as he would cease his activity, slowly integrating and locating the sound of the clinician's voice. Smiling brightly, he would bounce towards the clinician with his arms extended to be picked up. On those occasions when Tim was out of sight and the clinician called out his name, he would respond within a few moments by hopping and jumping to the clinician with a great display of delight. After exchanging affectionate hugs, they would set out for the therapy room, hand in hand.

En route to therapy, it was necessary to pass the kitchen where Tim was fed. Without exception, he would attempt to pull the clinician into the kitchen toward his usual place at the table. It appeared that his appetite and his need for oral gratification were insatiable as he would have just finished a midmorning snack. A piece of bread had to be used to entice him from the kitchen, as he did not comprehend the clinician's verbal efforts to explain why they could not go into the kitchen at that time. Once in the therapy room Tim would use every means at his disposal to communicate his wish to return to the kitchen. While the door was not actually locked he was unable to independently turn the knob or pull the door open. He would lead the clinician to the door, placing the clinician's hand directly on the doorknob. He would vocalize extensively as he looked directly at the clinician. His attempts to leave the room by the closet door and the bathroom door demonstrated a lack of geographical orientation in a mass action approach to problem solving. In his frustration he displayed the only exhibition of aggression to be seen during the entire course of therapy as he would kick the door. The clinician consistently maintained the limit and tried to communicate his recognition of Tim's feelings of anger and distress; however, he did not accept this limit.

It was remarkable to note that after spending considerable time attempting to leave the therapy room, Tim did not respond when the clinician would announce that his time was up and that they would have to leave. As this happened several times the clinician concluded that his lack of response was not negativism or an act of defiance but rather that Tim had a basic language deficit.

In his role as a reality surrogate, the clinician had to set very few limits except in special situations. Since Tim would swallow any material which was small enough to be ingested, the available selection of toys had to be carefully chosen. It was found that when the nursing bottle, filled with water, or a toy wooden mallet were available, he would rap them sharply against his lower teeth in conjunction with his mouthing and licking of them. It was not determined just what unique satisfaction Tim experienced from forcefully striking his teeth. It was conjectured that this activity could be stimulated by the intensification of the noise as the sound was conducted directly through the bone structures to the cochlea. Also, his wide-open mouth provided further amplification and resonance. However, in order to prevent the development of any dentofacial deformity, it was necessary to take these heavy toys away from him whenever he was using them in a hazardous way. Tim was passively acceptant of this type of limitation.

Thumb sucking was an essential part of his orality. Even though he displayed certain preferences for particular toys he readily substituted his thumb or another toy when the preferred object was not immediately available. As he would remove a toy held in one hand from his mouth, he would immediately shove the entire thumb of his other hand deep into his oral cavity.

Tim was not responsive to the clinician's verbalizations describing his behavior. Accordingly, the clinician intensified his efforts to communicate acceptance through nonverbal modes by imitating Tim's behavior. When the clinician imitated Tim's thumb sucking and rocking a distinct response was elicited. He would pause, study the clinician in amazement and mystification at what must have appeared to him to be most unusual behavior. He would continue to pursue his activities but his fascination with the clinician's behavior seemingly compelled him to return again and again to his scrutiny. These activities rapidly took on the character of a game culminating in Tim's thrusting his thumb into the clinician's mouth. In a similar fashion he was equally attentive to the clinician's imitations of his vocalizations. Some of his vocal output was produced with such pharyngeal and laryngeal tension that the clinician was only able to approximate these sounds. Each time Tim would utter a phrase of incomprehensible sounds he would look towards the clinician in anticipation of a response. This interaction seemingly delighted Tim and he increased his vocalizations in direct proportion to the extent of the clinician's imitations of him. This behavior continued for several sessions but his initial interest was transitory and diminished as the novelty dissipated. When Tim was silent and preoccupied in oral manipulative activities, the clinician would produce one of Tim's more frequent vocal phrases in an attempt to stimulate imitative vocal play. This never elicited any responsive vocalizations from Tim.

The clinician was able to communicate his availability and accessibility to Tim through the simple physical act of sitting on the floor. This facilitated frequent encounters including extensive cuddling. Tim would hop from the far corner of the room and fling his arms about the clinician's neck in an affectionate embrace. In the face of the extensive affective contact which occurred during the second month, it was startling to observe Tim overreact to certain movements made by the clinician. Any type of sudden movement evoked a fear response. Tim would cringe and raise his hands defensively as he cowered in fearful apprehension. Accordingly, the clinician made every effort to move slowly and telegraph his every motion.

In Tim's all-consuming need to keep himself in motion he continued to manipulate BoBo during some part of every session. Sometimes in his attempts to lie on BoBo, he would slide off onto the floor and roll about vocalizing gaily. The clinician became increasingly aware that Tim's vocalizations were markedly intensified whenever he would roll into a corner. He seemed to delight in hearing his own voice resound from the walls and floor. The same type of behavior occurred when Tim played on the bookcase. At times he would lie on a shelf and bombard himself with boisterous noises and laughter.

The one-way vision mirror directly over the bookcase held a special fascination. The mirror did not function as a mirror, but as a new tactile experience. By climbing on the bookcase, he was able to lick and slide his flattened tongue across the cold surface of the mirror. The clinician would join him at the mirror to protect him from falling or breaking the mirror, as he would indiscriminately tap and hit it with any toy that he was mouthing. Unexpectedly, this provided an opportunity for increased interaction as Tim utilized the clinician as an additional support in order to climb to the top shelf of the bookcase. From his vantage point, he would sporadically engage in an effusive display of affection towards the clinician. During such close contact the clinician observed that Tim's only interest in the mirror, apart from the oral stimulation it provided, was his attraction to the reflection of movement. He never studied his own or the clinician's reflected images.

From time to time Tim was observed closing his eyes with his eyebrows raised and turning his head from side to side in a "no" gesture. This behavior could not be related to any external stimulus and as it occurred frequently it was ascribed to part of his stereotypic pattern.

Some part of each session continued to be consumed with attending to Tim's needs associated with his persistent diarrhea.

Third Month (26th through 36th session)

There was no diminution in Tim's intense need for oral gratification. With the onset of cool weather his lips, chin, and thumb became sore and cracked because of the excessive salivation which accompanied his orality. In the hope of creating an interest in an appropriate use of his oral mechanism, the clinician introduced a variety of blowing activities. He was delighted with the clinician's production of bubbles as he watched them fall to the floor, occasionally breaking a few with his forefinger. When the clinician proffered the bubble blowing stick to Tim he opened his mouth as if it were something to eat, indicating his inability to see the relationship between the stick and the blowing of bubbles. Similarly, he attempted to eat a lighted match which the clinician had offered to him in the familiar game of "blow out the match."

Within the security of the developing relationship the clinician explored the possibility of guiding Tim into the constructive use of his hands with some of the play materials. While he was sitting in the clinician's lap, the clinician would set a model by playing with a toy in an appropriate way. Tim did not manifest any interest when the clinician built a three-block tower or drew simple geometric designs with crayons; however, he was passively acceptant of the clinician's gentle manipulations in guiding his hands in these activities. During the entire course of therapy the only spontaneous use of his hands in socially recognizable play was seen when he would occasionally crank the musical jack-in-the-box.

A demonstration of his minimal capacity for self-care occurred during this month when he spontaneously, but apprehensively, helped himself to a drink of water. As his water consumption was limited by the institution's staff in an effort to control his enuresis, he certainly must have been thirsty during previous sessions, but never had taken advantage of the free access which he had to the bathroom sink. It was as if in his meandering about the room he had just discovered the sink for the first time. Unfortunately, his first bold step forward ended in a fiasco. He had filled his glass from the hot water faucet. In the simple act of calling to him to inform him that he had used the wrong faucet, the clinician triggered an awesome demonstration of fear. Tim cringed, raising his hands defensively, dropping the glass, and fleeing from the bathroom. The clinician verbally explained that he could have a drink of water whenever he wanted one and encouraged him through gesture to return to the bathroom. When the clinician raised his arm gesturing towards the bathroom, Tim assumed his defensive posture again, as if he were about to ward off a tremendous blow. It was then that the clinician fully understood that Tim had no language comprehension. In the ensuing weeks, the clinician successfully communicated his permissiveness regarding Tim's independence in satisfying his thirst by gently leading him to the sink and repeatedly offering him the glass.

As Tim became more accustomed to obtaining his own drinks of water in the bathroom, the clinician took the opportunity to experimentally toilet him. It was established that he had sufficient control of his bladder to stand at the toilet and urinate which suggested that there was a readiness for him to be trained.

A marked change in the quantity of Tim's affect had developed since the beginning of therapy. He spent the greater portions of most sessions in ebullient giddiness. It became clear that he delighted in doing what he could do even though it was his usual stereotypic play. The quality of his laughter reflected his completely disinhibited expression of unrestrained joy. Periodically, an atmosphere of contemplative calm overcame his exuberance as he would cease his vocalizations and suck on his thumb, while gently rocking. When he was absorbed in vocalizing his vocal output contained phonemic fragments which gave them the unique quality of being easily construed as approximations of words; however, as they lacked any definite communicative purpose they appeared to arise from nothing and result in nothing. A series of simple syllables combining consonants, vowels, and dipthongs would stream forth. He produced no consonant blends, sibilants, or fricatives. The following is a representative fragment of his voluminous output: "aw-ka-pa---aw-ka-pa---aw-ka-pa---aw-ka--ka--ka--pa--pa --pa--pa--p-ow---; m--er-r-r---m--er-r-r---m--er--der-r-r--m--er-r-r-r-der-r-r--m--er-r-r-der-r-r; o--e--m-m-m--o--eee; ah--p--ah--p--ah--p--ah--eee; oh--m-m-m--eee; oh-m-m-m--i--eee."

Amidst these irregular groupings and reduplications of syllables, he accidentally would produce single syllable words. With a stretch of the imagination these sounds might be misconstrued as: a car, papa, murder, oh me, up high, and oh my.

Tim continued to seek intensification of his extensive vocalizations through the cupping of his hand in front of his mouth and by utilizing the walls, floor, bookcase, and corners of the room as sounding boards.

As it had been found that Tim's best response was demonstrated when both gesture and voice were combined, the clinician attempted to condition him to a single word. The word "Come" was presented in isolation and accompanied by the clinician's gestures of extending his open arms and patting his knee. Each time, numerous presentations were required before Tim would react.

Fourth and Fifth Months (37th through 60th session)

As therapy progressed Tim's behavior surrounding the transfer from his play group to the therapy room became completely predictable. His responsiveness upon seeing the clinician remained intensely affectionate. As no reduction in his insistent efforts to go into the kitchen en route to therapy occurred, the clinician circumvented this distraction by taking a circuitous route which by-passed the kitchen.

With the onset of cold weather it was necessary for the clinician to take care of Tim's outer clothing as he showed utter disregard for climatic changes. He was content to go out of doors without his coat, or to wear it while he was in the therapy room. In an attempt to encourage him in activities of self-care, the clinician began to make repeated attempts to foster his independence in managing his own clothing. As Tim was unable to manipulate his own coat zipper, the clinician would unfasten it for him and emphasizing the use of gesture, would try to get him to take off his coat. He would slowly pull it off and drop it on the floor. He exhibited the same lethargy and vague attempts in pulling up his trousers after urinating. Although he repeatedly made some effort to respond to the clinician's gestures, he was unable to sustain more than momentary attention, quickly reverting to his habitual hopping and rocking. In this moment, his inadequate pincer-like grasp was inefficient in its effectiveness. He behaved as if he were torn between his wish to comply and his phenomenal need to keep his body in motion. Even when the clinician assisted in dressing him, Tim displayed disordered perception in his lack of awareness that his arms were in the wrong sleeves so that his coat was back to front or upside down. He rarely positioned his body to facilitate any of the clinician's attempts to dress him.

During this phase of therapy Tim began to use his tongue as if it were an object, manipulating it by grasping it between his thumb and fingertips. The extent to which he bent, twisted, and folded his tongue was remarkable as he handled this appendage as if it were not actually a part of his body.

His play with the toys in the therapy room continued perseveratively with no modifications or variations in his habituated patterns of orality and hyperkinetic hopping and rocking. Tim's initial apprehension about independently taking a drink of water had been overcome through the clinician's repeated efforts to communicate the acceptability of this behavior. In his aimless meanderings he had come to include the bathroom as part of the available space, though he never entered the bathroom in a manner that suggested a purpose or goal direction. When he took a drink of water it was not the consequence of preplanning or abstract conceptual thinking, but simply the result of his accidental rediscovery of the sink that seemed to trigger his sudden recognition of thirst. He continued to use the hot water tap to fill his glass. After several small sips he would drop the glass in the sink, leave the water running, and hop out of the bathroom. It was only after two months of repeated gesture demonstrations on how to turn the water faucet off that Tim finally integrated their meaning, but he still required the external stimulation of the clinician's gesture.

Tim's perseverative absorption in stereotypic play could continue throughout an entire session without a shift. The clinician discovered that whenever he spoke or imitated Tim, the auditory stimuli acted as a cue which brought Tim momentarily out of his daze long enough to look up, giving recognition that he was at least aware of the clinician's presence. Because of such behavior, the clinician realized that unless he interposed himself as a stimulus for interaction, Tim would continue endlessly in stereotypic play.

Towards the end of the fifth month, Tim began to exhibit a disintegration and a far greater disassociation from his total environment both in therapy and in the milieu of the institution.

His physical appearance degenerated as he lost weight and became pale and peaked with an obvious cyanotic condition about his lips and fingernails. Now the midst of winter, his excessive salivation had caused his mouth, chin, and thumb to become increasingly raw and cracked. His overall behavior gave the impression that he was slowly slipping into an abyss far from the world of reality. The clinician felt impelled to use any means at his disposal to help maintain his contact with Tim.

As Tim was continually amplifying his own vocalizations and was responsive to the auditory stimulation provided by the clinician, it was thought that he might react positively to amplified sound through earphones. His lack of a startle response to sudden loud noises when a toy would fall to the floor or a balloon would break had cast some doubt on his auditory acuity. When the earphones were first presented, Tim was briefly apprehensive and withdrew, but he shortly demonstrated his acceptance and pleasure upon hearing his own vocal noises intensively amplified through the audio circuit of the tape recorder. In observing his responses, it became clear that a marked increase in the quantity and volume of his vocal output occurred whenever the earphones were in place; however, under these special circumstances no differences were noted in the quality or quantity of his responses to the clinician's vocalizations.

Since Tim had not imitated any of the clinician's vocalizations over the five month period, it was thought that he might be drawn into some interaction at a prelanguage level by engaging him in a game of imitating gross body movements. Holding Tim in his lap the clinician moved Tim's arms and hands in a variety of simple gymnastics. Even with repetitious presentations over a period of two weeks, Tim did not seem to comprehend the idea of what was expected of him. Instead of imitating the clinician's arm movements after the model had been set, Tim gave substitute responses suggesting that he seemed to know that he was to do something but did not know exactly what. He would reach up and place both his arms about the clinician's neck in his affectionate hug, then slip to the floor returning to his habitual pattern.

Sixth Month (60th through 68th session)

During this month, Tim became especially distressed. He had been plagued with a chronic cold in addition to his ever persistent digestive disorders. Over the six month period he had rarely been free from diarrhea. His poor health markedly affected his behavior in therapy. Whereas the previous months he had seemed exuberant during the sessions, he now manifest periods of infantile crankiness. Often tearful, Tim would crawl into the clinician's arms for consolation. Other manifestations of his disintegration were seen in the appearance of generalized apprehensiveness and a significant reduction in his vocal output.

By engaging Tim directly, the clinician found that he was able to help bring him from a diffuse catastrophic reaction to some degree of homeostasis by the end of the half hour session. The established relationship and the constancy of the atmosphere within the therapy room provided Tim with the security he needed in his otherwise disordered environment. Although he could become involved in a game of rolling a ball across the floor his level of motoric functioning did not exceed crude, poorly directed handling of the ball. In a carefully structured presentation of building blocks in which all distracting stimuli were removed, Tim was able to participate; however, in building a block tower he would accidentally knock a block off for every one he tried to put in place. From time to time he had cranked the handle of the musical jack-in-the-box but, although he tried, he was entirely incapable of replacing the jack and closing the lid. These examples of his motor ineptitude suggested a severely impaired eye-hand coordination.

On one occasion, the clinician tried to engage Tim in antigravity play. Tim held his body rigidly and awkwardly when the clinician attempted to guide his through a simple somersault. As he was not only motorically inept but also fearful, the clinician quickly shifted to other activities.

Tim's behavior continued to suggest perceptual dysfunctions. Because of the established relationship which provided the clinician with a sensitivity of the child's capacities and frustration tolerance, it was at this time possible to interject some simple perceptual and psychomotor tasks into the play situation without unduly threatening the relationship. By presenting a lighted match behind the one-way vision mirror, an observer recorded Tim's capacity to attend to and follow the moving light. Whereas some of the children responded to this particular stimulus by attempting to locate the light source within the therapy room, Tim had shown earlier in therapy that he was unaware of the usual function of mirrors. As he was completely unresponsive when the light was presented at the periphery of his field of vision, it was necessary to repeatedly introduce it directly in front of his face in order to attract his attention. He would gaze at it vacantly but the moment the light was moved from the very center of his field of vision, regardless of the direction, he ceased attending.

Tim, like the other children in the study, was particularly fond of sweets. Using candy to motivate him, an effort was made to explore possible ways of developing techniques for evaluating various factors of his perceptual functioning. He was allowed to see the candy placed under one of four inverted plastic cups (red, blue, yellow, and white). He succeeded in retrieving the candy when all four cups were used; however, when the presentation was modified by rearranging the cups after a candy had been put in place, Tim repeatedly experienced failure in locating the candy. When he was prevented from seeing the color of the cup under which the candy was placed and had to depend solely on the clinician's verbal directions, his lack of language comprehension was patently manifest.

The clinician's efforts to condition Tim to the word "Come" reached fruition in this final month of therapy when he consistently responded to the verbalization without the use of gesture when it was said in a loud, commanding voice.

Therapy was terminated by gradually diminishing the frequency of the sessions.

Case Summary

Medical History

For the first nine months of his life Tim was cared for in an adoption agency's infant home. When he was two months old he had a surgical repair of an inguinal hernia. Just prior to his adoption, when he was nine months old, it was noted that he had excessive drooling and had not achieved control of his head and neck. The agency ascribed his poor development as being part of a regressive process.

At the time of his brother's birth, Tim's adoptive parents became increasingly aware of his deviancy. They were concerned with his lack of speech development and aberrant behavior and began to seek help from a variety of specialists. Because of his hyperkinetic behavior and inability to communicate, physical, neurological, and psychological examinations were superficial. A systolic heart murmur was thought to be of functional origin. Two electroencephalographic studies were conducted; one of which was considered borderline normal, while the other was reported as normal. In the absence of definitive neurological findings and based on clinical observations and a review of his history, he was variously diagnosed as childhood schizophrenic, autistic, and symbiotic.

Previous Therapy

Three to four months of psychotherapy were provided in which Tim and his mother were treated as a symbiotic unit; however, his mother discontinued their treatment as she rejected the psychiatric focus on toilet training issues.

Because of the difficulty in managing Tim at home, he was hospitalized pending his institutionalization.

Residency at Seaview

When Tim was five years old he was admitted to Seaview. Eight months of his residency were studied and revealed that he remained completely dependent in all activities of daily living. His stereotypic patterns of infantile orality and his hopping, bobbing mode of ambulation continued unabated. His copious production of incomprehensible vocal noises was astounding.

Throughout his stay at Seaview he was plagued with digestive disturbances. Persistent diarrhea was thought to be related to his extensive ingestion of nonfood items and could, in part, account for the generalized deterioration in his physical status. Many of the adults in charge of his care actively rejected him or withheld affection because of his excessive salivation and his malodorous diarrhea.

Experimental Therapy

Observations and impressions gained during the sixty-eight sessions of experimental therapy were as follows:

Nature of the Relationship

In spite of the restrictions imposed by Tim's lack of language, an intensely affectionate relationship developed. Body language was the primary vehicle for the communication of mutual acceptance. It was necessary for the clinician to actively provide the stimulus for interaction in order to prevent Tim from endlessly pursuing his sterile, repetitious play. The clinician provided sustained auditory contact through imitative vocal play and by singing to Tim. A major portion of each session revolved about Tim's toileting needs. During the course of therapy his physical status degenerated to such a degree that the focus of therapy was primarily the maintenance of the existing relationship.

Perceptual Processes

Tim's responses to external stimuli which were observed in both structured and unstructured situations were as follows:

Olfactory.--Tim did not manifest aberrant use of this process.

Gustatory.--There was no evidence of any discriminatory process in this modality. Indiscriminate mouthing, licking, and ingesting of nonfood items prevailed. While he exhibited certain food preferences presumably on the basis of their texture and ease of handling, he did not manifest any aversions.

Tactile-kinesthetic.--Oral tactile manipulation of all objects seemed to serve not just the purpose of oral erotic stimulation, but as a way of knowing any object. Tim relied heavily on an oral mode of perception to the preclusion of other modalities. Materials were never used in socially recognizable ways but only included in his prominent hand-to-mouth pattern.

Response to Pain.--A mass action response was elicited whenever he experienced any painful stimuli.

Visual.--Tim was attracted by movement but his attention was fleeting. He often appeared to be in a daze as he gazed off into space focusing on nothing. He seemed to be able to disassociate himself from his environment by staring at an object which he would shake directly in front of his body. Attempts to measure his visual discrimination and memory for color and form were inconclusive.

Auditory.--Tim generated most of his own auditory stimulation by his copious vocal output. He took particular delight in amplifying his own vocalizations either through the direct increase of his volume level or by redirecting the sound to his ears by vocalizing against reverberating surfaces. He never manifest a startle response to sudden loud or unexpected noises. Inconsistent and delayed responses to external stimuli suggested that he had hearing, but that he made few if any associations.

Motor Behavior

A need to keep some part of his body in motion preoccupied the bulk of his day. He was consumed with incessant rocking and hopping while simultaneously shaking some long, flexible object held at the midline of his body. He rarely walked or ran using a normal gait, even though he was capable of one. When a rocking horse was available he was content to rock for hours in isolation from his environment.

He was able to ascend stairs with alternating feet; however, he continued to use the infantile pattern of descending one step at a time. He frequently extended his arms to be carried up and down stairs.

In the absence of social learning, he showed none of the fine motor skill required in activities of self-care. A prominent stereotyped method of grasping was seen in the pincer-like manner in which he hald most objects. The rotation of doorknobs presented a problem to him as he did not take a firm grasp on any object. Despite his crude and awkward grasp, he managed to turn on faucets and fill his glass with water.

Vestibular Functioning.--As Tim did not seek antigravity play, there were no occasions to clinically assess his vestibular functioning.

Linguistic Functioning

Receptive.--With the exception of the beginnings of primitive associations to the combination of tone, volume, and gesture Tim gave no evidence of understanding the symbolic processes of language.

Expressive.--An examination of his peripheral oral mechanism revealed no structural abnormalities. His tongue was extremely facile.

Although he was able to produce a great variety of speech sounds, they had no communicative value other than the nonvolitional aspects which vaguely indicated the nature of his mood. His major expressive effort was the physical manipulation of adults. The quantity of Tim's vocal output exceeded that of any other child in the group. He was capable of emitting endless vocalizations for extended periods of time. Volume, pitch, and rate variations of a wide variety of consonant and vowel sounds often gave his vocal noises the characteristics of normal speech.

Time and Spatial Orientation

Because of Tim's limited range of activity, it was not possible to assess his recognition of temporal or spatial relationships. His use of the available space was restricted to limited segments suggesting a third dimension sense impairment.

A singular demonstration of geographic orientation was shown by his recognition of the general location of the area where he was fed.

Reaction Time

Tim's reactions to both visual and auditory stimuli were significantly delayed or absent. Absorbed in introcentric activity, he tended to disregard external stimuli as he seemed unable to attach meaning to them.

Learning

Attention.--Tim was so completely dominated by perseverative behavior that this impeded his possibilities for learning. His problem was not one of attention, but that of overattending, marked by an inability to shift.

Imitation.--Tim exhibited no capacity to imitate or integrate any visual, auditory, or kinesthetic models. In task-oriented situations he made substitute responses in an effort to participate.

Memory.--There were very few examples of memory functioning apart from simple associations with regard to being fed. He seemed to recognize the person who fed him and knew where he was fed.

In the absence of any goal directed behavior, Tim appeared to be unable to maintain the symbolic representation of absent objects and people. After multiple repetitions, he was able to form simple associations through conditioning.

Problem Solving.--When confronted with frustration Tim exhibited rage followed by a mass action approach. Unfortunately, in the absence of any demonstrable abstract attitude, he failed to recognize alternatives.

Case History of Debra

Date of Birth: 7/18/55

Family History

The following information was compiled from various psychiatric reports. Debra's father, of Russian Jewish background, was born in the Northeast. As the second of three siblings, he had an older brother and a younger sister. When he was six years old his father, a furrier, died of cancer leaving the family with severe financial problems. His mother took in boarders in order to support the family.

While in high school, Debra's father received two years of treatment for a severe case of stuttering. After graduation he entered the Navy where he was trained in electronics. Upon discharge from the Service, he applied for admission to a college but was not accepted; however, while working in electronics during the day he attended evening courses at a local university for one year. Eventually, he developed his own electronic business.

Debra's mother was also born in the Northeast of Russian Jewish background. She reported that her early childhood was "all right," but that her family was not "warm." She stated that she did not receive much attention from her father and that she did not get on well with her younger sister, a nurse. During her childhood her mother, who had never enjoyed good health, had several operations. After graduating from public high school she attended a merchandising school. She married Debra's father, whom she had known since grade school, and worked only a short time after their marriage.

It was reported that her first pregnancy had ended in a miscarriage at three months. Eight months later she missed a period and her obstetrician, thinking she was pregnant, anticipated her next period with "injections to prevent bleeding." He succeeded and continued the injections for five months, at which time they were satisfied she was not pregnant. It was said that both parents were extremely upset by this experience.

Her third pregnancy resulted in the birth of Debra's older brother. Because of her earlier experiences she did not go to the doctor until she fainted when she was five months pregnant. She felt well through the rest of her pregnancy, but she reported that she had a very long hard labor ending in a forcep delivery. She stated that she had been informed that "he was choking on the cord," and that they could give her very little anesthetic. She also reported that she had experienced "a lot of bleeding" and had had trouble with hemorrhoids. It was reported that after the birth of her son "she was very depressed for several months." At first "she did not want to look at him." She felt "unsure and insecure" about how to care for him; however, when her son was six months old her mother went on a cruise and "she did not have anyone to cry to so she snapped out of it."

Her fourth known pregnancy, three years later, resulted in the birth of Debra. It was reported that this pregnancy was planned; both parents wanted a girl. Debra's mother stated that towards the end of this pregnancy she was rather frightened about the delivery because her first had been so difficult.

At the time of Debra's birth, her mother was twenty-seven and her father twenty-eight years old.

Birth Record

Although an examination of the hospital records revealed that the pregnancy was an uneventful, thirty-nine week term, the mother reported that at the time of her period during her third month she had experienced one day of staining. The duration of labor was not recorded; however, Debra's mother described it as extremely fast and easy. The presentation was vertex and the position was left occipt anterior. There was no information available regarding anesthesia. An episiotomy and repair were performed. Although there were no postpartum complications recorded by the hospital, Debra's mother reported that three days after the delivery she recalled having an infection in her rectum. Because of her pain she was sedated for five days, during which time she did not see Debra.

The infant's birth weight was recorded in the hospital records as five pounds, nine ounces, and her general condition at birth was described as good with no anomalies seen. The infant's hospital history revealed that tremors occurred when Debra was two days old. Two days later it was noted that she occasionally appeared rigid. A physical examination revealed a "vigorous, normal baby"; however, Phenobarbital was prescribed. Debra's weight upon discharge was recorded as five pounds, twelve ounces.

Infancy (First-Second Years)

Debra was bottle fed. It was reported that her mother did not try to nurse her because "she did not want to."

The neonatal period was stormy. At six weeks Debra developed severe diarrhea eventually resulting in a seven day hospital admission for dehydration when she was three months old. She was discharged with a diagnosis of gastroenteritis and a left inguinal hernia. Debra was placed on a meat-base formula as it was felt that the etiology of the diarrhea was probably on an allergic basis.

After seven days at home during which time her diarrhea was controlled, Debra was readmitted to the hospital for the reduction and repair of the left inguinal hernia. An examination of the hospital records revealed that at that time her weight was ten pounds, fifteen and one half ounces. She made an uneventful recovery and was discharged five days after the surgery. There was no information available regarding anesthesia.

Referring to this episode, Debra's pediatrician recalled:

> ". . . Debra developed a large inguinal hernia, which required more than the usual surgery from the point of view of time and skill because of the large defect which was present. . . ."

Debra's first tooth erupted when she was five months old. At six months, her pediatrician made the diagnosis of "torsion of the tube and ovary on the left side which subsided without surgery."

Debra's parents reported that following her discharge from the hospital she was croupy, toneless, apathetic, and did not do well for sometime. She would wake up screaming every night about an hour and a half after falling asleep. The question of celiac disease was raised. Her pediatrician commented:

> ". . . Debra had a very labile digestive tract. She had frequent episodes of diarrhea. None were associated with marked dehydration, but all of them required delicate management. These episodes continued until ten months of age."

It was reported that Debra was cared for by a nurse who was seemingly quite attached to her, calling her "little princess." During this period Debra's mother tried to give most of her time to Debra's older brother as she was temporarily relieved of her responsibility for Debra.

Debra's motor development was uneven and slow. She was unable to roll over independently until she was nine months old. Her mother reported that she did not seem to be interested in walking. At twenty months Debra was able to walk alone after her mother had made considerable efforts to encourage her. Her mother stated that she seemed quite clumsy, fell frequently, and was unable to pick herself up. She required orthopedic shoes to correct her tendency to invert.

Debra's mother described her as not an especially "smiley" baby and less responsive than her brother. She reported that Debra did not raise her arms to be picked up and had what she described as a rather "dull" look. Her prelinguistic functioning included a variety of vocalizations; babbling was said to have occurred around seven months and a few words at fifteen months. Her parents purported that her speech developed to include the expressions of: "mommy," "daddy," "Santa Claus," "poppy," "brother," "car," "bus," "milk," "bow-wow," "pussy cat," "poppy's car," "up," and "down," and such simple sentences as, "I want milk," "I want to eat," "Daddy is here," and "Daddy's new car." She did not give her name upon request nor did she know any rhymes or songs. Although her mother felt Debra recognized some environmental sounds such as music, she did not respond to loud noises or attend either to the prohibition "no" or to her name. It was her parents' impression that Debra rarely understood when they spoke to her.

Her mother reported that when Debra was about eighteen months old she began playing with her bowel movements, smearing and eating them.

Debra had a moderately severe case of mumps when she was twenty months old. She was very quiet and compliant with no stupor or convulsions reported. In retrospect, her parents dated her regressive behavior marked by her loss of speech and awkward motility to this episode. Concurrent with the mumps, Debra cut molars which gave her "a lot of trouble." Her mother reported that she drooled a great deal and "bit on everything." For the next two months she seemed quieter and less vocal.

In an attempt to seek a causal explanation for Debra's "speech retardation," her parents recounted a questionably traumatic experience which occurred when she was about twenty-three months old. During a summer vacation trip Debra traveled with her father in his car, while her brother and mother preceded them in another car. Her mother's car was damaged in an accident but neither her mother nor brother were hurt. Her father was never quite sure if Debra actually saw the crash. From this point on her parents claimed that she only talked about the car and was supposedly heard to say repeatedly, "In the car."

Shortly after this, a series of catastrophes beset the family. Their city apartment was destroyed by fire and Debra's brother was rushed to the hospital for a hernia operation. Because of this crisis, Debra stayed with her maternal grandmother during the day for four weeks.

When Debra was 2:1 a pediatric assessment was sought as she had almost completely withdrawn.

Pediatric Consultation

> ". . . She had developed obsessions--becoming hysterical when she saw a young man with sandals on until he changed them. She would get upset if anyone crossed their legs. She had almost entirely stopped speaking.
>
> ". . . She seemed to be in a trance. She talked very little. It was extremely difficult to get her attention.
>
> "Recommendations.--Referral for psychiatric evaluation."

Following the recommendation of this pediatrician, Debra's family arranged for her to be seen by a psychiatrist two months later.

Psychiatric Evaluation

> "Neurological examination fails to reveal any weakness or spasticity in her extremities. The reflexes are all active and no abnormal reflexes are present. Cranial nerves are intact. Her hearing and vision are apparently normal. During the examination she was hyperactive, inattentive and preoccupied with just moving about. She refused to handle any of the toys and was completely inattentive and unaffected by any attention getting device I used during the attempted psychometric tests. Yet, very peculiarly, she noted if anyone crossed their legs and became particularly disturbed when her mother crossed her legs.
>
> "Impression.--I found that she is functioning in an intellectual level of about eleven months even though she is twenty seven months of age, compelling me to make a diagnosis of intellectual retardation, etiology undetermined, probably cerebral injury at birth or associated with the anesthesia at the time of herniorrhaphy. Against this diagnosis of birth injury is the fact that the family is certain that Debra's early

> development was normal. We must keep in mind the possibility of infantile autism or schizophrenia. The diagnosis can only be effectively evaluated after a period of observation.
>
> "Recommendation.--I would recommend that Debra be given Ritalin Hydrochloride 5 mg. t.i.d. and increased to 30 mg. per day progressively with the assumption that we are dealing with a brain injured child. If the medication is effective, the purposeless hyperactivity will stop, and if ineffective, the hyperactivity would be exaggerated. . . .
>
> "Reevaluation in six months. . . . "

Debra was not seen for reevaluation. Her parents reported that an hour and a half after taking the drug prescribed she became tense, clawed at her face, and seemed very upset. Although it seemed to quiet her at other times, this medication was stopped.

Debra's family returned to their pediatrician for advice. He stated, "I noted that she was physically and mentally retarded." He suggested that she be evaluated at a large urban physical medicine and rehabilitation clinic. A comprehensive evaluation was conducted when Debra was 2:4.

Medical History

> "Debra was referred because of 'regression in development since age 2:1. . . . '
>
> ". . . Though she never spoke a lot it appears as though she has regressed in speech. When spoken to or an attempt to get her attention is made, she seems to be in a world of her own. However, when mention is made about a car, she seems to show some interest. She has lost interest in toys and books, and when they are presented to her or they are lying close by she just passes them by. She has lost all reaction to dolls. However, when someone crosses their legs she appears to go into a mild tantrum or else approaches that person until their legs are uncrossed. There has been no apparent regression in physical activities though she may be less interested in running about purposelessly but is hyperactive with no goal in mind.
>
> "At the present time she no longer finger feeds which she used to do. She holds a glass for drinking and spontaneously lets it fall out of her hand. She is bowel trained to the extent of being 'caught' and she apparently knows what the commode is for. The mother made the comment that Debra loves to look pretty. She likes to walk barefooted, play with her body, and is coprophilic.

"There has been no history of any trauma. . . . I was told that Debra had the mumps prior to the onset of the present complaint. She was not seen by a physician; however, from the history there apparently were no signs of mumps encephalitis. No history of any inoculations. No history of any seizures . . ."

Physical Examination

". . . Physical examination revealed a well-nourished, well developed child who was cooperative in a very passive manner. She made no attempt to communicate either verbally or socially with the examiner. However, with my assistant, a woman, she played, handled toys that were presented to her, took a lollipop in her right hand, put it into her mouth, and while being observed it was noted that she had good reach and grasp. Release was spontaneous; as an example, she asked for water and it was given to her in a glass. She drank a bit and then just let the glass fall into her lap.

"Head was 19 inches circumference with prominent frontal bossae. Her sitting height was 19 inches. Her weight 25 pounds. Her height 35½ inches. Eyes react equally to light and accommodation. Normal movements. Eye grounds reveal no pathology. (Pupils dilated by cycloplegia.) Ears, nose, throat, heart, lungs, abdomen, genitalia and extremities revealed no abnormalities."

Neurological Examination

"Neurological examination revealed no evidence of any cranial nerve weaknesses, sensory loss or abnormal reflexia except for persistent plantar grasp in both feet. Attitude as noted previously. In addition she kept running about the examining room in a purposeless manner. Gait was reciprocal with some suggestion of ataxia. She was unable to climb steps without support of her parents. However, on a functional basis, there is no gross evidence of any muscular weakness."

Laboratory

"Urine tested for phenylpyruvic acid was found to be negative."

Electroencephalographic Report

"The frequencies and amplitudes are within normal limits for a child of two years. During sleep tracing the activity, on occasion, appeared to be sharp in form. The activity is essentially symmetrical for the two hemispheres. There is no pathological slow or fast waves present.

"Impression.--The E.E.G. is within normal limits for a child of two years. The activity is symmetrical for the two hemispheres. There is no evidence of a focal lesion and no activity of the type seen in epilepsy."

"Debra was placed on Benadryl 10 mg. t.i.d. for a week. Her hyperactivity definitely diminished. The mother felt that she was too drowsy and was not responsive because of the medication and it was stopped for a trial period. . . .

". . . Debra's mother is under a great deal of emotional strain. She feels she is responsible for the child's condition, and though she would be very reluctant to accept therapy for herself if not as part of the rehabilitation for Debra. Debra's father also expressed a great deal of concern about his daughter, but on a more realistic (?) basis."

Summary Impression

"Debra appears to show evidence of personality disorganization.

"Recommendation.--Refer for psychiatric consultation and recommendation for therapy."

Following this recommendation, Debra's parents sought a psychiatric consultation when she was 2:6.

Psychiatric Consultation

". . . The child is a small, two and a half year old girl who is attractive and appears to be normally developed. She was extremely restless and her father specifically was continuously holding her or following her or picking her up while the mother did most of the talking from her notes. However, both parents impressed me quite favorably, and I did not become aware of the possibility that the mother was as disturbed as the referring physician indicated over the phone. He stated that her obstetrician told him that she had a postpartum psychosis after the birth of the first child, a boy, and started to have one following Debra's birth, but that the obstetrician stopped it. . . . The father's attention was most organized. He was the one that changed Debra in the office when she indicated she was wet by trying to drag off her diaper and plastic panties. . . .

". . . It would appear that the parents watch her very intently and emphasize every new activity that is gained and subsequently lost. They speak of a number of obsessional patterns. She is extremely interested in car riding, and when nothing else will keep her quiet, this will. She will also rush to the window to look out for a car if cars are mentioned. She also likes to play over the toilet bowl which the mother finally disapproves of or forbids it or tries to punish her for it. She pulls things out of every cupboard and drawer she can reach. Most of these are the normal compulsions of a child a year and a half to two and a half, but apparently take up more of this child's time. She is pretty well bowel trained, but is not trained for bladder control except to the extent that if the mother puts her on the toilet often enough she can often avoid wetting. She used to feed herself, but now has stopped this. The doctors have now decided that she is not allergic and there is no family history of allergies.

"My own examination and observation of the child while talking to the parents was that she is a petite, charming, evenly developed girl with a head circumference of less than 19 inches, a high palate, constant drooling which the parents assigned to teeth cutting. However, they admit that she was always cutting teeth and therefore always drooling. Her nose was running continuously, she urinated twice during the hour, she was constantly active, mostly flitting about on her tiptoes and at the same time wriggling her fingers and also wriggling her toes if she was held on one's lap. She was touching the wall and every other object, climbing, rubbing her mouth, biting various objects including her mother's hand, whimpering and whining but rarely using a recognizable word. She showed no anxiety, I could pick her up and play with her and cuddle her, and, furthermore, she accepted anti-gravity play. However, this activity had to be continuous or she would climb out of my lap. She was definitely hypotonic, her legs could be crossed and elevated to her forehead. She showed no specific interest in any object except to touch, bite, or press her face against it. However, she understood considerable of what was said, would respond when called, would rush to the window to look out when the father said, 'Come see a car,' and would giggle over subjects discussed which the mother said always caused her to giggle, and whine over others. She did say a few words such as 'car' and 'go out.' She was not particularly plastic, and did not show any vaso-motor instability except some generalized lability and inflamation of her gums and the excessive secretions of the upper respiratory tract.

"Impression.--It was my impression that this was not a schizophrenic or autistic child, but that she was a developmental deviate with a total biological maturational lag probably resulting very early in utero but possibly exacerbated by the infantile illnesses. There seems to be considerable evidence of accelerating development and emphasis on regressive behavior has been exaggerated. She has a good relationship with her father and mother, and they have the facilities to give her the proper care. I explained the situation to the parents, although telling them that I could not give a final opinion until I saw her again at a subsequent date and noted the developmental trend. I recommended that they return to the referring physician for a more thorough trial of Benadryl and/or Ritalin or other drugs which would help her to organize herself, and that the parents should not get concerned over temporary periods of drowsiness, excitement, or sluggishness, and that she should also be placed in a nursery school as soon as possible for a full day, and they should anticipate accelerated development approaching the normal though possibly never reaching it."

On the follow-up examination, it was reported that:

> "Debra crossed her fingers all the time and walked on her toes. . . . The parents were refused in their attempts to place Debra in the recommended nursery school program. . . . During the examination Debra reacted negatively and tried to bite. She seemed more out of contact than she had been. . . . The consideration of institutionalization was suggested and a referral for a neurological examination was made. . . ."

Debra's parents could not accept the suggestion for institutionalization at that time and were supported in their view by one of their medical consultants; however, he did concur with the recommendation for a complete neurological work-up.

Third Year

Neurological Evaluation

> "Debra is grossly a normally developed three year old who is in constant, hyperactive, random motion with occasional rocking movements. There was much oral activity, but no sniffing. She could be reached emotionally by taking her upon one's lap where her behavior is best described as clinging. She smiles at the examiner, accepting toys but mouthing them. She is not doughy. Her play was at the primitive level, but showed no perseveration. Her muscle tone was normal. She could hear, responding to her mother's singing to her, but made no verbal communication in the form of speech. On neurological examination there are questionable plantar responses, the right palpebral fissure is greater than the left, there is a prominent epicanthal fold in the right. The hair is coarse and the skin thickened. On arising from the dorsal recumbant position, the posture is about the two year level. Hand preference was not established.
>
> "Debra's sibling was not seen. Her mother was tense, cried easily, desperate for help concerning Debra, overwhelmed with feelings of inadequacy and guilt concerning her. She appeared capable of giving affection and warmth. Debra's mother has a history of thyroid difficulty. Her father was a 'bad stutterer in childhood.' Outwardly he is more calm than his wife, tends to have explosive outbursts, especially to his wife.
>
> "Impression.--Debra is suffering from a deep-seated biological disturbance affecting the speech function primarily although there is also retardation at the motor level. The exact cause of this I do not know. To me, however, this child does not appear schizophrenic. She fits rather into the

> category of developmental deviations which may be genetically determined, but which do not have structural brain damage. The tremors on the third day of life, her coarse hair and thickened skin, the mother's thyroid dysfunction, suggest that Debra's thyroid function be studied. To this basic biological problem is added the stress of a difficult first year and the removal from her mother soon after mumps, all of which would tend to intensify her symptoms."

Debra's parents did not accept the suggestion for thyroid function studies and again were supported in their decision by another medical consultant.

Amidst this diagnostic dilemma and because of persistent eczema, Debra was referred to a dermatologist when she was 3:1. He made a diagnosis of atopic dermatitis (neuro-dermatitis).

Psychiatric Consultation

Because of her family's growing concern regarding her condition, they sought further help and were referred to a child psychiatric clinic in a large, urban hospital when Debra was 3:4. The following were excerpts from the psychiatric summary report:

> ". . . She has been rocking a great deal in the past four months. . . . She still takes three bottles each day. . . . She drooled up to six months ago. . . . She plays with no toys. . . . One week ago she was taken off tranquilizers. Since then she seems more irritable and screams a lot. . . . When she is in her crib her mother can hear her 'talking' but cannot make out any words. . . . At nine months her brother put her on the toilet for fun. She defecated and from then on was bowel trained. She would indicate her need to defecate by saying, 'Ah-ah.' The mother has not tried to bladder train her. She occasionally will urinate in the toilet but usually wets herself. She had regular bowel movements but stools tend to be rather hard. Since she has been using the toilet she tries to get some feces to play with as they come out. This is becoming less of an interest lately. She grinds her teeth occasionally. Her mother cannot relate it to anything especially that has happened. She plays with her genitals when on the toilet. Mother has ignored this. A few transient fears, never of people, but of such things as a table, seems to be afraid of going down stairs.
>
> "The marriage has been happy. 'He's a wonderful person,

a good father, very considerate, well liked by everyone.' (No faults?) 'At times he can be very adamant. Sometimes forgets to call me when he's coming home late.' He has a big drive for success, carries a good deal of insurance. Mother feels this is because his father had none and his parents had such a hard time. She thinks his drive to work keeps him away from home too much. Sexual relations very good up to one year ago. Now the father is very tired and the mother thinks she has less desire since she is so worried about Debra with the result that their relations have not been satisfactory.

". . . Debra's mother has been in good health except that lately they have found a small lump in her thyroid. They do not think anything should be done at present. Has taken Equanil regularly for past eight months. . . . Since she has been worried over Debra, she had become quite tense. She is very intolerant of father's working hours, thinks he could manage better, and that it is a drive to work hard rather than to succeed. Mother has always had a pessimistic point of view, feels she must be prepared for the worst. Mother would like to have another child because she feels she never really 'had a baby' because of her depression with her son and then Debra's illness. She probably will have one more child a few years from now. Her husband always wanted three children.

"They live in a four-room garden apartment, planning to move to a larger garden apartment in a few weeks. They like their present neighborhood. . . . Both parents appear to be above average in intelligence. Father is the calmer of the two. Mother is a slight, dark haired woman who seems quite tense. She did most of the talking in the early contact.

"Observations of Debra.--Debra is dark haired, well-developed and nourished, separated from her parents with great ease. At first she wanted to be almost entirely on the go. She walked around from one place to another in what appeared to be a rather aimless fashion. Her walk is very awkward, but she did not fall. Finally she found a rocking chair and rocked a few minutes. Her mother sang some songs she knew, and she looked directly at the mother and smiled.

"I took the rocking chair in my room and sang to her in there. She looked at me and smiled, later laughed aloud. She was interested in the stairs, but did not try to go down them, just sat down and bumped down. Her interest in toys was mostly to put them in her mouth. She ate quite a few cookies, dropping parts of them on the floor. When I was singing she came quite close to me, pressed up against me.

"At the second interview, she smiled more and laughed aloud a number of times. There were only a few other oral noises, 'er---er' is said occasionally. She was content to stay in the room with me for longer periods of time, again smiling and laughing when I sing. No interest in xylophone or any other toys except to put them in her mouth. She played with water a little, and smeared a little finger paint on the basin. She again wanted to go down stairs, and this time walked down very awkwardly, holding the bannister with one hand and my hand with the other. At the bottom she sat down and kicked off one of her shoes. When I tried to put it on she kicked playfully at my efforts and laughed. Going up the stairs was best achieved when I stayed behind her and held both her hands. When she dropped a toy she was sucking she leaned over to pick it up and got herself up to a standing position by awkwardly catching herself up like a child who is just beginning to walk. There was little evidence of much speech comprehension though we need further observations to confirm this. She apparently does hear as she is much more interested in songs she knows than ones she doesn't know, but thus far we cannot be certain whether there might be some impairment in hearing.

"When she saw a little boy with a lollipop she tried to take it away from him, then accepted one for herself quite happily.

"Physical Findings.--No clear-cut organic basis for the problem is shown by the neurological.

"Psychological testing was not attempted because it was felt that the child would not cooperate well enough for the test to have any validity.

"Course in Clinic.--Debra has been having individual nursery sessions with periodic observations by the psychiatrist. Both parents have been seen each week for case work interviews.

"Debra has made less response to this program than most of the children with whom it has been tried. She related initially to the teacher much as she did to the psychiatrist. From that point on the relationship has remained much the same except that she has become a little more relaxed and on certain days smiles a good deal and seems happier. Her play is at about a one year old level. She likes to walk about, but apparently more for the pleasure in locomotion than because of interest in the surroundings. There has been a good deal of water play of a very primitive nature, drinking it and splashing about. She has shown no interest in the nursery school materials. She seems pleased when she is rocked and sung to. At first she was markedly resistent to being dressed and undressed, less so recently. She tends to put objects in her mouth very frequently. There was biting at first which has become much less. She has made more oral noises out of which a word could occasionally be recognized, 'not,' 'good.' Her coordination still seems poor though she rarely falls or bumps into objects. Since she has found some relationship with the teacher she apparently does not pay much attention to anyone else in the clinic except for an occasional smile.

"Impression.--This is a case in which the diagnosis is quite difficult to make. I am inclined to believe that she should be classified as childhood schizophrenic, autistic type. However, an organic basis cannot be entirely ruled out.

"Recommendation.--I had suggested our program be tried for a six months period. We recognize that our program for these children is rather limited, but it is almost impossible to find anything more extensive for children of this age. The parents are beginning to make good use of case work. In the past two months they have been asking about placement away from home and this has been discussed at considerable length. We did not oppose placement, but suggested that if it were possible we would prefer a foster home rather than a school. Mother especially did not accept this very enthusiastically, but did permit us to explore the possibilities. They have had difficulty in making a decision about this and wanted to get another psychiatric opinion to which we readily agreed.

"Our thinking is that Debra possibly should not continue in our program very much longer, but that if she remains at home we will try to find a program which would be more intensive. We have suggested a trial period of placement in a summer camp program which might help the parents to come to a decision."

When Debra was 3:9, her parents sought an additional psychiatric opinion.

Psychiatric Consultation

"As described Debra is petite, pretty, small headed, looking a cute two or three years old.

"She was screaming in the waiting room and hall, running around desperately until her favorite record was put on and then gradually quieted down. Yet she continued to wander around, fumbling, mouthing whatever came her way.

"She gave no sign of recognition or relating to the other person as a person. She occasionally glanced at mother or me. There was an occasional touch of an appeased, satisfied smile --not directed. There was a tolerating of being cuddled, handled, swung, and when stood up on the window sill she fingered my hair like a one year old. When I lifted her on my arms she did not hold on but licked my cheek (yet without the emotional touch of the small child who starts to kiss or to relate).

"Debra made rudimentary sounds/words: 'Be-be' when she wanted the record, or something like 'Ma' when she wanted something done.

"There was anticipation that the record, once put on, will start to play and sometimes angry anticipation that it soon will end. After the record had ended she handled machine and record roughly in spite of a gesture to make it go on again. In angry frustration she would let herself fall on the floor and start to bang her head.

"There was no consistent interest or handling of anything except listening to the record while walking around on tiptoes. She showed vague recognition of a prohibition ('Don't touch flowers') the minute it was given, but did not follow through for any length of time. General functioning thus was definitely not beyond the one year level.

"Debra's walk is awkward, a little unsteady and knock-kneed, and there was easy tipping over and falling when an obstacle (a hassock, or another standing person) stood in her way without evaluation of the obstacle or enough body turgor to withstand it. The turgor of her body is very soft; she feels like a six months old.

"Impression.--To me this child shows the stamina of both an organic as well as an autistic disturbance. If she were organic only she would still relate some even though on a much younger level (and when she regressed she might have, e.g., chosen words or phrases with a more emotional significance rather than. . . 'Go in car'. . . .) As a matter of fact, on initial and superficial observation the autistic shutting out and only relating to an inanimate, circling, musical object is much in the fore. (Moreover, hereditary factors confirm schizoid trends.) However, beyond this autistic quality, her general functioning, the poor coordination and general softness, as well as her history, also point towards organicity.

"This is one of the not so infrequent cases where we find both disturbances. It is of academic importance only whether 1) Genetically she represents already a combination of both, the organic picture just being part of the severe deviation; or 2) Whether this is a child who according to the genetic blueprint of her make up was meant to be deviant/autistic, and then encountered prenatal, natal, or postnatal organic damage. (There certainly was enough organic damage postnatally); or 3) Whether an early organic damage in her took the schizoid-autistic reaction form.

"Prognosis is poor. If autistic alone: we know only some few lucky ones outgrow and never completely; they usually show better functioning and signs of improvement already earlier. According to Kanner and Eisenberg's follow-up studies, the outlook is bleak if speech does not set in by five to six. If organic alone: with this degree of organicity and so little improvement, (she would need to grow even more than one mental year in one chronological year to catch up) the prognosis would be poor too.

"My suggestion to the parents is to give her the best environemnt, a structured therapeutic setting, for another one or two years at Seaview, and then rediscuss the future."

Admission to Seaview

When Debra was 3:11 she was admitted to Seaview for residential care. In response to Seaview's pre-admission questionnaire, Debra's mother provided a comprehensive review of her status.

"Debra is 34 pounds, 39 inches. She is completely dependent on others for dressing. Debra is generally happy, hyperactive, a good eater, and very loveable. She likes to be loved. Still oral--puts most objects in her mouth. Toe walker--it is necessary to keep shoe trees in her shoes as they are inclined to curl up and cause blisters. This is due to her walking on her toes so much of the time. She crosses her fingers. She likes to play in the toilet bowl and with the toilet flusher. Also with toilet paper when on the roller. She is quite ticklish. When hugged she will lick your face if you ask her for a kiss. The most important thing in her life at this time is her record. Recently gave it a name, 'Baba.' She seems to be fearful of walking up and down stairs alone. Last summer she fell down a few steps, since then has been fearful. She can climb up on chairs and beds, etc. She has been on various tranquilizers--Sparine, Thorazine, Ritalin, and Equanil. Most of them caused drooling. We tried to put Debra in a regular bed six months ago. The first week she went right to sleep. However, after that she kept running out of bed. We then put her back in her crib, and she seemed much happier and more secure. If told to stay away from something hot, she appears to understand. Likes to play with doorknobs, and swing doors open and shut. Generally her health is good. . . . Debra enjoys water play and car rides. Sometimes she likes to be thrown up in the air, or, she likes to be swung by two people on either side of her each holding a hand. At this time she might say 'Wheee' if you say it first. When in a playful mood she likes to rub noses. She enjoys it when someone pretends they are chasing her by stomping their feet and saying, 'I'm going to catch you.' Debra likes to chew gum, but must be reminded not to swallow it. She usually will spit it out. She likes the following toys right now: a bell that she can hold in her hand and ring, blocks that make a noise when she shakes them, and a rattle with a bell inside of it.

"Daily Routine.--Debra gets up between seven and eight. Sometimes she wants a record on immediately. She likes to run around for a short time before eating breakfast. She has a bottle after breakfast in her crib. She likes records on at times when she eats and when she drinks her bottle. When having her bottle and when resting in her crib, she likes to play with the satin binding on the corner of her blanket. She gets dressed after her breakfast bottle, looks out of the window and plays with water in the basin. She has a snack at midmorning, and lunch at 12:30, a bottle after lunch, and rests in her crib. She is then put on the toilet for a bowel movement. During the afternoon she has a car ride or runs around outside, has a snack at midafternoon, and supper at five-thirty. She is put on the toilet after supper. She has her bath and goes to bed at six-thirty with her blanket, her bottle, her brown Teddy bear, and with records playing.

"Toilet Habits.--She generally has hard-ball bowel movements. Sometimes she does not complete her movement at one time. She is inclined to play with her bowel movement when she makes it in her pants. When on the toilet she likes to play with her genitals. If Debra is put on the toilet often enough, she will urinate. I believe she is aware of what the toilet is for. . . .

"Sleeping Habits.--Debra does not take a nap, but will rest in her crib with her bottle and records playing. At night she wakes up after she is asleep one hour. She must be comforted, and the records must be put on. If she continues crying, she should be picked up and talked to softly, then put back in her crib on her stomach. Some nights she will waken two or three times in the early part of the evening, but after that sleeps well through the rest of the night.

"Tantrums.--She starts by banging her head against or on a bed, wall, or other object. She can be comforted the following ways: put on records, put a small amount of water in the sink and allow her to splash in the water, give her something to eat that she likes (potato chips), give her a bath. She does not like running water. As a last resort, take her for a ride in the car. When Debra is upset she will have her fingers crossed.

"Foods.--Debra enjoys most foods, has no food aversions. She has to be fed but can finger feed herself or use a fork if the food is first speared. . . . I have not weaned her, but I believe she could be weaned.

". . . The following is a list of things that Debra did before regressing. She rocked her dolls in a carriage, walked with her doll carriage, and if told to love her dolly would hug it. She always loved to look at small children's books and would pick out certain characters. She liked certain television programs--'Mickey Mouse,' 'Pop Eye,' and cartoons. If she were told to comb her hair with a comb, she would do it. She threw a kiss, but not from her mouth, from her head. When told to make a face like a clown, she would wrinkle up her nose. She loved dogs, and liked to sit in her musical rocking chair."

Psychiatric Consultation

Seaview's consulting psychiatrist saw Debra upon admission and made the following evaluation:

> "I saw Debra and her parents for the first time this afternoon. Both parents were deeply concerned with their decision to place Debra away from home for the first time. Mother seemed particularly anxious, and needed a great deal of reassurance.
>
> "She frequently mentioned the disagreements among the various doctors who had seen Debra as to her diagnosis, prognosis, and need for residential care. Both have been reassured by the parents of another child who had improved considerably

here and as they say, 'had built all their hopes in the school.' Debra was seen in her bedroom where her things were being unpacked. She is of average size for her age, a pretty little dark eyed girl who moved around the room mouthing many objects and with a great deal of random activity, which did not appear goal directed.

"She did not look at me but upon request and when I picked her up managed a quick glance and a fleeting smile. When I took her outside alone, she showed her reluctance to descend the stairs, tried to hold on to the wall on her side and needed a good deal of encouragement to step down. Half way down the stairs, she gave up walking, sat down and tried to slide down the rest of the way on her bottom. She did this swiftly and it appeared that it must have been painful. In the garden, she walked with me at first and I thought her coordination and her muscle tone were both extremely poor. She spontaneously let go of my hand and I noticed that as she walked towards the fence, her gait seemed irregular and she seemed to veer toward the right. She very quickly tired of the walking and curled up half playfully on the ground. At times sitting cross-legged and rocking, and at times rocking on her knees, she rocked backward on her knees, steadying herself with her wrists flexed and not extended. She seemed to indicate that she wanted to be carried and smiled and allowed herself to be picked up, but as soon as she was in my arms, she banged her head against my cheek bone and head and continued to do this giggling playfully each time she had accomplished a bump. Two or three times while in my arms, or when walking willingly holding my hand, she made quick little attempts to bite, succeeding once in giving me a quick nip on the left anterior neck and on the hand which was holding hers.

"She drooled a great deal and said a few words not very clearly which sounded like: 'the Baba' and which I later learned referred to her record. In addition to the drooling she attempted to eat grass and flowers, stuffing them into her mouth and chewing on them rather lackadaisically. I did not think she swallowed them, and she was quite placid whenever I attempted to take them from her mouth.

"There was a marked bone prominence about the size of a pigeon egg on the left parietal area of the skull. This seems to be the spot which she strikes most in her head banging.

"Impression.--Severe infantile autism or atypical child. Prognosis guarded. I believe that at the present time, Debra ought to have a trial in residential treatment rather than at home."

Fourth Through Sixth Years

Residency at Seaview

The following outline of Debra's behavior in the milieu of Seaview was compiled from the direct observations of the research staff and an examination of the school records covering a period of two years and seven months of her residency. (3:11-6:6)

Activities of Daily Living

Eating.--Within a short period after her arrival Debra was weaned to a cup.

Poorly developed motor skills prevented Debra from feeding herself. This, combined with her erratic appetite, necessitated the continued practice of feeding her. Even when she was fed she rejected some part of every meal and occasionally refused to eat anything.

Debra's mode of ingesting food remained at a primitive and infantile level. In the process of mastication, some food would fall from her mouth as she did not use her tongue or lips to contain it. Although she remained seated at mealtime she continuously agitated her hands and her head, further complicating her feeding and making it a slow and tedious process. When she did not want any more to eat she would simply spit the food out.

Gastrointestinal upsets persisted with frequent episodes of vomiting reported.

Sleeping.--Sleep disturbances continued to be a major problem area. Debra averaged ten to twelve hours of sleep in her crib nightly but she rarely slept through the night without awakening once or twice. Because of her irregular sleep pattern she frequently required daytime naps. She generally appeared listless and fatigued.

Toileting.--Debra was not toilet trained. She gave no indication through any sign or signal when she needed to toilet even though she would often produce when placed on the toilet. If she were toileted immediately after her lunch she frequently produced a bowel movement; however, if she were not toileted at regular intervals she would urinate or defecate in her pants.

Nocturnal enuresis and periodic episodes of diarrhea persisted.

Dressing.--Debra remained completely dependent upon others in all dressing activities. She was totally unconcerned about wearing clothes and provided no assistance to those dressing her.

Motor Behavior

Debra never demonstrated a normal walking gait. She was unable to run, jump, or climb. The most prominent feature of her gait disturbance was her persistent pattern of tiptoeing. As she tiptoed about she appeared to totter forward, and as her mincing steps quickened it seemed as if she were unable to slow or reduce her forward momentum until she was stopped by a solid object. Because of the lurching, stumbling quality of her gait she frequently fell.

When not propelling herself about she would stand flat-footedly, with her feet set widely apart, and rock from side to side. She also spent long periods of time seated on the floor with her legs crossed. Although she was able to use juvenile chairs, larger furniture presented a major obstacle as she did not use her arms to assist her in climbing.

Debra was unable to ascend or descend stairs without the complete assistance of an adult. With a considerable part of her body weight supported, she was able to ascend stairs with alternating feet; however, even with support she continued to descend stairs one at a time.

Severely limited in her motor development, Debra was restricted in her ability to move about freely or to appropriately use the available playground equipment. Immediately after those occasions when adults gave her a ride on the playground swing, she demonstrated increased instability in her gait.

Apart from a predominant hand-to-mouth pattern, Debra's hands and arms were in continual athetoid agitation. She constantly pinched and pulled at her hair, flesh, and clothing.

Linguistic Functioning

Tape recorded samples of her vocalizations were made throughout her milieu at Seaview. All of Debra's vocalizations were produced with considerable laryngeal and pharyngeal tension and minimal articulatory movements resulting in only a few vowels and two consonants, "k" and "d." Vocal output consisted of whispered exhalations following breath holding. As he breath was released the consonant "k" could be heard followed by the whispered vowels "ah" or "ee." The articulated exhalation resembled the whispered phrase "ko - ee - kah." This phrase tended to be repeated in each audible exhalation, although some exhalations resembled only the whispered vowel "ah." Her spontaneous vocalizations of staccato vowels sometimes resulted in phrases of definite melody and rhythm patterns, which were repeated a few times. At other times there were pitch changes from one vowel to the next but without repetitive melody patterns. The vowels tended to resemble the neutral vowel "uh" with occasional suggestions of "ah," "ee," or "i." Her laughter resembled that of an infant. None of her vocalizations were used for communicative purposes.

Asocial Behavior

Debra appeared withdrawn, inaccessible and especially remote because of her limited expression of affect. There was a complete absence of any social learning or any comprehensible communicative process. She continued her pattern of rocking and head banging. Frequent breath holding and forced exhalations of air developed during her residency at Seaview.

Response to Frustration

It was seldom possible to ascertain the factors which precipitated Debra's daily exhibitions of distress. The only observable response to frustration was manifest when her freedom of movement was being limited. She clearly displayed her distress by closing her eyes and repetitiously jerking her head from side to side. This habitual manipulation of her head was often accompanied by attempts to bang her head with the heel of her hand; however, because of her incoordination she seldom succeeded in actually striking herself. In a similar manner she would bang her head against her pillow, bed, or any person within close proximity. These episodes of head banging were often accompanied by crying, tears, and screaming.

Response to Environmental Change

The minimal changes which occurred in her daily routine produced no identifiable responses because of her diffuse, disorganized behavior.

Response to Children

Debra never engaged in any socially meaningful interaction with other children. She became readily disturbed by noisy, aggressive, and abusive children. She did not manifest any awareness or discrimination between children and adults.

Response to Adults

Most adults reacted affectionately to Debra by kissing, cuddling, fondling, and tickling her because she was so petite and the only young girl in the entire group. She briefly accepted their physical contact, but her responses were minimal and inconsistent. When being held in the lap of an adult Debra frequently would place her open mouth against the adult's face which was interpreted as a kiss. This same gesture would occasionally result in a bite rather than a kiss. Debra became readily distressed when she was handled vigorously or excessively manipulated.

Health and Physical Status

While at Seaview, Debra continued to have frequent gastrointestinal upsets, upper respiratory infections, persistent rashes, and skin eruptions.

After two years of residency at Seaview Debra was taken to the local pediatrician for a physical examination. Her height and weight were recorded as forty inches and thirty pounds. (6:0)

Pediatric Examination

> ". . . Ideal weight for height and age is 36 pounds. Her development was fair, nutrition fair, and child was of small skeletal development.
>
> "The A-P diameter of chest was slightly flattened. Lungs were clear. Heart sounds were of good quality. Rate and rhythm were normal. No murmurs were heard, and there was no shift in the P.M.I. Vollmer tuberculin patch test was negative. Urine was negative for albumin, sugar, and phenylketonuria. HGB. was 88%; WBC 7,100 with a chamber differential of 44/56.
>
> "It was advised that this child be maintained on a multiple vitamin preparation such as Vidaylin, and be returned in one year."

Pediatric Neurological Consultation

During the course of therapy a consultant to the research staff reviewed the case history, examined and observed the child. Attention was called to the structural abnormality of her left occipital lobe. It was felt that her toe walking and muscle weakness were suggestive of a subcortical lesion and that the behavioral elements were secondary to an organic deficit. Because the question of a progressive pathology remained unanswered, a complete neurological reevaluation seemed to be indicated. It was not possible to implement this suggestion. (6:1)

Psychiatric Reassessment

After two and a half years of residency at Seaview, Debra's parents arranged for a reassessment by the psychiatrist who had originally referred her for institutionalization. (6:5)

> ". . . I see most marked change in the areas of moods, social responsiveness, and communication, and naturally also some maturation of her coordination. Looking at her now, she has the appearance of a four year old, not retarded child with a great deal of resemblance to her mother. Outstanding is still her extreme restlessness and I wonder whether a new

attempt with pharmaco-therapy would not be indicated since quieting down (as long as she does not become drowsy) might further some intellectual growth.

Experimental Therapy

Debra was thin and small in stature for a six year old child. Her size, combined with the pale quality of her skin contrasted with her dark hair and eyes, gave her the appearance of being delicate and fragile.

Debra was seen by the female clinician for sixty-five therapy sessions. Her behavior was characterized by stereotypic patterns, breath holding, and the complete absence of any functional communicative process. During the course of therapy it became evident that Debra's motor development was retarded, in all areas.

With the exception of a vitamin supplement administered for the first few days of therapy, Debra did not receive any drugs during the course of therapy.

First Month (1st through 12th session)

Debra was scheduled for therapy immediately following her lunch. She required complete guidance and assistance in navigating the passageway and stairs leading to the therapy room. Without active direction she would wander aimlessly about the hallways, and when confronted by stairs she would sit down. Because of her lurching, stumbling gait it was frequently necessary to carry her to the therapy room.

Most of Debra's behavior patterns which were to occur over the course of therapy were observed during the first month. As she tiptoed about, her hands and arms were in constant discoordinated athetoid movement. She would hook the tips of her fingers on her lower teeth, clench her jaws, and continue to jiggle her arms. When her hands were not in her mouth she would pinch and pull at her hair, skin, and clothing. In the same manner, she pinched and pulled at table edges and window curtains.

Her glazed stare and vacant facial expression gave no indication that she might be visually examining or exploring the room or its contents. As she veered and tottered about, utilizing all the available space, it appeared that her contact with the furniture, the play materials, and the clinician were purely accidental. When any play material on the floor blocked her path she would trip or stumble and, without looking at the object in an attempt to avoid it, she would continue tottering on.

The paucity of her contact with the available play material was striking. Casually she reached out, picked up the nursing bottle, momentarily chewed on the nipple, and then let it drop to the floor. She never visually followed the movement of anything which she dropped whether it had been in her hands or her mouth.

Debra chewed and swallowed any object which was small enough to be held in her mouth. Whenever clay was present it was not possible for the clinician to restrict her, either verbally or with gesture, from ingesting it. As the clinician wanted to minimize the need to physically limit her, it was necessary to be highly selective in the size and edibility of the available play material. The pacifier was introduced in an attempt to provide her with an acceptable substitute for oral gratification. She briefly chewed it without using her hands to hold it in her mouth and then let it drop to the floor, making no attempt to retrieve it.

Throughout the entire course of therapy Debra was attracted by the sparkle of the glass doorknobs. Whenever she happened to be near the doors, she would jiggle and rattle the knobs while standing flat-footed with her feet set widely apart and rocking from side to side. She would rock in a similar manner while standing in front of the window and gazing off into space.

Whether sitting or standing, Debra sporadically exhibited a stereotypic pattern of jerking her head from side to side. She would close her eyes and, with considerable force, repetitiously jerk her head from left to right three or four times. On some occasions these head movements were accompanied by a discoordinated effort to strike her forehead with the base of her right hand. Even when she was under close scrutiny within the therapy room, it was not possible to clearly establish the nature of the precipitating stimuli; however, it was clear that this behavior pattern was representative of a form of distress, thereby serving a primitive mode of non-volitional communication. Distressful vocalizations accompanied these head banging attempts.

During the first month it was found that she had to sit on furniture which was precisely at the required height, allowing her to slide on and off without the need to support her body with her arms. Thus Debra came to favor sitting cross-legged on the window seat. It was also discovered that she was unable to stand up once a cross-legged position on the floor had been assumed. She required the clinician's complete assistance in order to get up from the floor. It appeared that she lacked sufficient muscle power to pull or push herself from a sitting to a standing position.

During this initial phase of therapy it became apparent that Debra did not comprehend any of the clinician's verbalizations. Therefore, the clinician attempted to establish auditory contact with her by repetitiously singing popular children's songs. Although Debra had fleeting but frequent eye contact with the clinician, she rarely initiated body contact. As she tiptoed and lurched about the room, she would bump and lean against the clinician who was seated on the floor. This was often accompanied by the forward posturing of her head and the brushing of her open mouth against the clinician's cheek. Occasionally during these brief contacts, Debra would collapse into the clinician's lap. Gradually during the course of therapy, the clinician became sensitive to Debra's body tone and posturing as indicative of her need to sit down or to get up.

Debra exhibited an all-pervasive pattern of breath holding and dysrhythmic breathing, accompanied by occasional vocalizations. It appeared that her limited phonemic productions which were emitted with marked pharyngeal constriction were more an accidental result of the positioning of her fingers in her mouth than the deliberate positioning of her articulators. The clinician's imitations of Debra's vocalizations failed to elicit any observable response.

Occasionally, Debra had not been toileted prior to coming to therapy. The only observable sign that the clinician learned to recognize as an anticipatory signal of her need to toilet was her momentary cessation of activity. She made no volitional communicative gesture to indicate this need, and after urinating she exhibited no awareness or discomfort about her condition.

During the course of the first month Debra was periodically heard grinding her teeth.

Second Month (13th through 25th session)

It was clear that Debra's motility limited the possibility for interaction. When she was not tiptoeing about the room, she would sit immobilized on the floor. The clinician attempted to stimulate interaction with Debra by singing to her while guiding her in rhythmical body movements. These rhythmical activities of rocking and singing provided the clinician with repeated evidence of Debra's lack of body turgor and plasticity. She readily accepted the clinician's modification of her habitual side to side rocking. As she sat straddling the large puncho toy with the clinician supporting her, it became clearly evident that she was unable to maintain her balance independent of the clinician's support.

Throughout the course of therapy water play was constantly available to Debra; however, her interest was sporadic and her attention was never maintained for longer than thirty seconds. She would stand before the sink, rocking from side to side, agitating her hands in the water and periodically sucking her fingertips. In order to provide her with the opportunity to explore all the possibilities of water play, the clinician undressed her and placed her in the bathtub. Pleasurable infantile vocalizations were evoked during this activity while Debra sat, in her usual cross-legged fashion, agitating the water with her hands. Her complete dependence upon the clinician to place her in and take her from the bathtub further substantiated suspicions of her basic motor deficit. Because of her gross unsteadiness, the clinician had to maintain constant surveillance to be assured that she did not injure herself.

Debra was completely dependent in all aspects of dressing and undressing. This was observed when the clinician dressed her subsequent to the bathtub water play or when it was necessary to change her pants. She repeatedly failed to position her body by moving her arms and legs in ways which would facilitate the dressing procedure. It was found that the manipulation necessary in order to dress Debra often provoked a distress response. This occurred whenever she had to be physically limited or manipulated.

The clinician gradually came to recognize specific behavior which was the precursor to head banging. A rapid shift from flacidity to muscle rigidity followed by more forceful rocking movements ultimately led either to banging her head against the clinician or attempting to strike her head with her own hand. Through the clinician's increased sensitivity to the highly variable nature of Debra's frustration tolerance, it was possible to anticipate a catastrophic response and prevent its occurrence by adjusting the environment.

Third Month (26th through 35th session)

In order to facilitate the possibilities for more physical contact with Debra, the clinician spent increasing periods of time sitting on the floor. With the clinician more accessible, Debra approached her with greater frequency and regularity. Because of the unsteadiness of her gait she continued to stumble into the clinician, fleetingly brushing her lips against the clinician's cheek, shoulder, or back. On two occasions she bit the clinician. It was not clear whether Debra was actually attempting to "kiss" or was using her mouth as an additional support to prevent her from falling. In the absence of any manifest distress it was difficult to consider her biting as an expression of aggression. After prolonged observation, it was clear that Debra's capacity to respond to the clinician was limited to physical interaction because of her total lack of language comprehension.

Debra's extensive pattern of oral behavior persisted over the entire course of therapy. She continued to suck and chew on her fingers, producing excessive salivation and drooling. Periodically bruxism occurred.

A more definitive picture of her motoric dysfunction became evident during this month. Immediately following rocking Debra exhibited a marked increase in her tendency to stumble and fall. When the clinician would lift her from a sitting to a standing posture, it was found that the sudden change of plane left her particularly unsteady. Several minutes were required for Debra to adapt to the new position and gain her balance. An athetoid quality was seen in her stereotypic manipulation of her hands when she would attempt to clap them together. This gesture was especially discoordinated as her hands were poorly positioned and held loosely. Repetitiously waving her hands back and forth, she rarely succeeded in bringing them in direct contact with one another. This was similar to her discoordinated and unsuccessful efforts to bang her head with her hands.

Fourth Month (36th through 47th session)

A modification in the therapy activity occurred during this month. After the first three months of therapy it had become apparent that Debra's basic deficit was not an incapacity to relate but that of motor retardation associated with cerebral dysfunction. Within the limits of the relationship in process, it was felt that the clinician should explore the possibilities of helping Debra to develop some basic motor skills, not only to further the existing relationship, but as a prerequisite to the finer motor skills necessary for self care. Alert to her low frustration tolerance for manipulation, the clinician began to incorporate a few minutes of direct work on gross motor functioning as part of each session.

It was established that Debra, while awkward and inefficient in her movements, was nevertheless able to roll over when in a supine position. She was able to sit up independently; however, it was necessary for her to sit cross-legged in order to maintain this position. When her legs were extended she would fall backwards into a recumbent position. She was unable to raise herself to a crawling posture if she were lying on her abdomen. When placed in a crawling position, she was unable to support her body weight with her arms as she would fall to one side and assume her usual cross-legged posture. While the clinician supported her in a crawling posture, Debra demonstrated further discoordinated use of her hands by inverting them, palm up, resting her weight on her wrists. Even when the clinician appropriately repositioned her hands, Debra was unable to crawl independently. It was found that she could maintian a kneeling posture only when she was placed in front of a bench which provided her with the necessary support for her upper body.

By the end of the fourth month Debra had learned to get up from a kneeling position using the bench for support. In order to accomplish this limited goal, it was necessary to repeatedly position her hands and legs through each of the required movements. No amount of direction, using verbal or gesture communication, was effectual.

Concurrent with the clinician's pursuit of a more active role, the frequency of Debra's self-initiated contacts significantly increased. She looked at and maintained closer proximity to the clinician.

Minimal changes in her vocal behavior were noted during this period. Her laughter and giggling response to tickling lacked the vibrance and exuberance usually heard in six year olds. It was more like that of an infant. Whereas in the early months of therapy her vocal productions were almost exclusively limited to accidental sound productions associated with extensive pharyngeal constriction, she now was heard producing a variety of vocalizations which were more like normal speech sounds. These random vocalizations occasionally approximated the melody and pattern of brief phrases from often repeated tunes. She was frequently heard endlessly whispering reduplicated individual phonemes such as "ma-ma-ma-ma-ma"; "ka-ka-ka-ka-ka-ka"; and "dih-dih-dih-dih." Although the phrase "ko-ee-kah" had been repeatedly interpreted to mean "go in car" it was the clinician's opinion that all of Debra's introcentric vocalizations were non-volitional and did not serve any purposeful communicative function nor have any symbolic value.

Debra had never taken an interest in the toy closet. While many of the children constantly sought entrance to the closet as a potential storehouse of pleasant surprises and a possible hiding place for candy, Debra had never manifest this interest. It was felt that this was representative of her limited capacity to integrate symbolic processes.

Because of irregularities in Seaview's schedule, occasionally it was necessary for the clinician to feed Debra during the therapy session. Accordingly, the following close observation of Debra's eating behavior was made. She passively accepted food when it was placed directly in her open mouth; however, she did not seek food even when a spoonful was held inches from her mouth. Because the muscles of her oral mechanism were so flaccid,her ingestion of food was strikingly inefficient. As her tongue and lips were used minimally to acquire, retain, or swallow a mouthful, both solids and liquids spilled from her mouth in the same manner as would be seen in an infant. Although she could chew, her mastication of food was slow and laborious. When she drank she would bite on the edge of the glass, and it appeared that rather than gulping and swallowing, she ingested liquids by sucking. When Debra was satiated she ceased chewing and let the entire mouthful fall. During the feeding she continued intermittently to hold her breath, flap her arms, shake her head, and close her eyes.

Fifth Month (48th through 59th session)

The main vehicle for the maintenance of contact during therapy continued to be the clinician's singing to Debra. Rhythmical body movements and direct work in the development of gross motor skills became the major focus of every session. While there were no basic modifications in her stereotypic patterns, new behavioral manifestations were observed. Accompanying her persistent pattern of breath holding Debra would suddenly arch her back, shake her head with her eyes closed, while simultaneously attempting to bang it with her hand. After continued observation of this behavior, it was noted that there was a period immediately following these episodes in which her discoordination and unsteadiness became so marked that she had difficulty maintaining even a sitting posture.

On sunny days large blocks of sunlight patterned a portion of the therapy room floor. Debra frequently would cease her random movement about the room and stand transfixed, staring at the bright patches of light, while rocking from side to side.

During the five months of observation, Debra had never exhibited a startle response to loud or sudden environmental noises. There were no external signs which indicated she was even aware of a balloon breaking, a door slamming, or toys dropping. A cogent example of her lack of response was seen on several occasions when she stood directly in front of the musical jack-in-the-box while the clinician cranked it. When the jack popped noisily out of the box, she failed to exhibit even a reflexive eye blink reaction. While Debra exhibited minimal responsiveness to the clinician's singing, she was in no way responsive to any language stimuli. As all of the clinician's efforts utilizing both verbal and gesture communication had previously met with no success, she attempted to condition Debra to the firmly stated verbalization, "Come Debra" accompanied by gesture. Regardless of the number of presentations and with the auditory figure-ground clearly separated, Debra consistently failed to respond.

During the forty-third session, Debra had spontaneously and independently moved from her cross-legged position on the floor by rocking her upper body so that she fell forward in a kneeling position, and using the bench for support pulled herself erect. She continued to sporadically demonstrate this newly acquired motor skill. The stimulus was always self-initiated and never in response to the clinician's coaxings. Continuing efforts in directing her crawling activities reached fruition when, in the fifty-third session, she crawled two steps to the bench and pulled herself erect. At the termination of therapy Debra was able to independently crawl a distance of four feet. She did not acquire the gross motor skill necessary to squat; therefore, she was unable to independently return to a sitting position on the floor unless she fell or was placed by an adult.

Sixth Month (60th through 65th session)

In an attempt to assess Debra's visual perception, a lighted match was presented behind the one-way vision mirror while an observer recorded Debra's capacity to attend to and follow the moving light. Even though Debra stood directly in front of the mirror and the light was repeatedly presented within inches of her face, she never attended to the stimulus.

During the final phase of therapy an effort was made to explore possible ways of developing techniques for evaluating various factors of perceptual functioning. Most of the other children in the study actively pursued food, expecially candy. It was not possible to discover any technique to motivate Debra to perform simple tasks. She never sought candy, even when it was placed in her hand or directly in front of her on a table. After clearly demonstrating her pleasure when the candy was placed directly in her mouth, she made no attempt to retrieve it when it fell. When a sugar cube was placed in her hand she appeared completely unaware that she was holding anything and simply let it drop to the floor.

Additional variations in her vocal output were heard during the final month. Recordings made during the sessions revealed that while there was a quantitative increase in vocal output, the only qualitative changes that occurred were the production of the consonant sounds of "m" and "b," which had not been previously heard, and a general lessening of laryngeal and pharyngeal tension producing a remarkable increase in volume.

Therapy was terminated by gradually decreasing the frequency of the sessions.

Case Summary

Medical History

Debra's medical history was replete with complicating factors from conception through her prenatal life, birth, and early infancy. Two hospitalizations occurred during her first six months of life; one for dehydration, and the other for the surgical repair of an inguinal hernia. Because of her retardation in all areas of development her family pursued help from diverse specialists who offered equally diverse diagnoses.

Debra was viewed as a diagnostic dilemma. She was described by many specialists as a child with organic or biological deficits, while other diagnosticians felt she presented the picture of childhood schizophrenia or infantile autism. Some diagnosticians saw her as presenting both organic and psychotic features. The greatest weight was given the psychodynamic features, almost to the exclusion of any others, in evaluating her behavior and performance.

Previous Therapy

For approximately six months Debra was seen in the nursery school program of a psychiatric clinic. After periodic observation by the psychiatrist and weekly case work interviews with her parents, the recommendation for institutionalization led to Debra's placement at Seaview when she was three years and eleven months old.

Residency at Seaview

Two years and seven months of her residency were studied and revealed that Debra continued to be completely dependent on adults in all activities of daily living. Because of her size and motor deficits, she was relatively a minimal management problem but required constant protection and surveillance. No significant change in her behavioral status occurred during this period except for the development of an all-pervasive pattern of dysrhythmic breathing.

The prominent feature of Debra's behavior as observed in the milieu of Seaview was her characteristic manner of sitting cross-legged on the floor or tiptoeing and stumbling about with her hands and arms in continual athetoid agitation. In the absence of any comprehensible communicative process and because of her limited expression of affect, she appeared especially inaccessible and remote.

Experimental Therapy

Observations and impressions gained during the sixty-five sessions of experimental therapy were as follows:

Nature of the Relationship

The complete absence of any verbal or gesture communication restricted the relationship to the most primitive nonverbal modes. The clinician came to recognize the significant aspects of Debra's behavior which had communicative value and were indicative of either pleasure or distress. By ordering the therapeutic milieu it was possible to minimize the frequency of her periods of distress.

During the course of therapy Debra's exclusive absorption with herself diminished slightly and was replaced by greater awareness of the clinician's presence. A quantitative increase in eye contact and self-initiated body contact evolved. It was necessary for the clinician to provide the stimulus for affective interaction through sustained auditory contact by singing to Debra. As the clinician became sensitive to her frustration tolerance, successful efforts to lead her in gross motor activity through rhythmical body movements were introduced without impairing the relationship.

Perceptual Processes

Debra's responses to external stimuli which were observed in both structured and unstructured situations were outlined as follows:

Olfactory.--Debra did not manifest aberrant use of her olfactory processes.

Gustatory.--There was no evidence of any discriminatory process in this sensory modality. She ingested many nonfood items and she did not demonstrate any clear-cut food preferences or aversions.

Tactile-kinesthetic.--Her extremely limited contact with objects was marked by brief oral-tactile manipulation where her mouth functioned as the primary organ of perception. Materials were never handled or used meaningfully. Her constant dropping of objects from her hands as well as her mouth suggested that Debra had reduced proprioception and accordingly was unable to tactilly discriminate between objects.

Response to Pain.--No observable discomfort was manifest whenever Debra inflicted pain on herself. The force with which she constantly bit and gnawed her fingers, pinched her body, and pulled her hair suggested a need for intense stimulation.

Additional evidence of Debra's reduced proprioceptive feedback was seen when intense painful stimuli produced a delayed, gross bodily reaction.

Visual.--Debra's acuity, discriminatory ability, and integration of visual stimuli were suspect. She seemed to require close proximity to objects before she focused on them. She frequently stumbled on toys which she had dropped on the floor. During those periods when she gazed off into space she showed no visual response to objects which were passed within inches of her face. She was especially attracted by intense light stimuli.

Auditory.--Environmental stimuli of maximum intensity consistently failed to evoke a startle response. Debra did not demonstrate awareness or recognition of any environmental sounds. If it were not for the fact that her vocalizations were occasionally produced with normal voice quality, her lack of responsiveness to all auditory stimuli would have suggested the possibility of a peripheral hearing loss.

Motor Behavior

Muscular hypertonicity was reflected in marked retardation in all areas of Debra's gross and fine motor functioning. The extent of her motor disability was patently manifest when it was discovered that she could neither stand up from a sitting posture on the floor nor sit on the floor from a standing position, independent of external support. A tiptoeing, staggering gait severely impaired her motility. Her eye-hand coordination was significantly affected by her athetoid movements. She lacked the fine motor control of her oral musculature needed for the efficient ingestion of food. In the face of her extensive motor retardation, she displayed an intense need to keep some part of her body in constant motion.

Vestibular Functioning.--Debra's equilibrium was readily disturbed by any motion which was not on a horizontal plane.

Linguistic Functioning

Receptive.--There was no evidence that Debra understood or could be conditioned to any symbolic process.

Expressive.--An examination of the peripheral oral mechanism revealed that with the exception of a high palate no structural abnormalities were present. An apraxic quality was noted in the inefficient manipulation of her tongue and lips when eating or drinking, precluding the functional capacity of her oral mechanism for speech.

Through primitive body language, crying, and whining Debra expressed her moods. Although there were no volitional communicative processes, an increase in her vocalizations was identified as associated with periods of contentment.

While they occurred infrequently, she produced a few speech sounds and some nonspeech sounds. Most of her sound productions were the product of the exhalations following breath holding and were frequently unvoiced because of the extensiveness of the pharyngeal and laryngeal tension.

Time and Spatial Orientation

Debra exhibited a complete lack of the recognition of temporal or spatial relationships.

Reaction Time

Debra's manifest responses to sensory stimuli were either significantly delayed or absent.

Learning

Attention.--Debra had only momentary attention to any external stimuli. All of her energies were expended in her all-pervasive need for movement as seen in her stereotypic behavior patterns, severely limiting the possibilities for learning.

Imitation.--Debra did not imitate or integrate auditory, visual, or kinesthetic models.

Memory.--She formed only the most primitive associations through conditioning after numerous repetitions presented over a prolonged period of time.

Problem Solving.--In the absence of any goal directed behavior, Debra did not demonstrate any capacity for problem solving. She responded with rage and intrapunitive behavior whenever her movements were physically limited.

Case History of Glen

Date of Birth: 5/13/54

Family History

The family background was abstracted from social work reports of Glen's parents which were done in conjunction with Glen's diagnostic work-up.

Glen's father, of Protestant background, was born in the Middle West. It was reported that he had a very happy family life as a child, but had considerable friction with his parents during his adolescent years. His anxieties seemed to focus on his appearance; a severe case of acne and a poor wardrobe. These "personality problems" persisted into his early adult life. He graduated from college with a master's degree.

He had had one previous marriage which ended in divorce after a short time because his wife was openly having affairs with other men. There were no children by this marriage.

His early work experiences were fraught with many difficulties. He stated that he had been an outrageous "flop" in his job and was finally asked to leave. At twenty-nine, when Glen was born, he was out of work and experiencing great financial difficulty. It was reported that he felt that the financial security his wife had enjoyed in her first marriage had made it especially difficult for her to accept some of the economic difficulties which they had had during the first years of their marriage. A year after Glen's birth, he obtained a job with a company where he did well and felt secure. He reported that his "personality difficulties" seemed to disappear overnight when he finally got a satisfactory job.

Although he reportedly had a history of rheumatic heart disease, his health was described as good. He was reported to be athletic and energetic with a very easy disposition.

Glen's mother was born in the Northeast of Protestant parents. Her childhood was reported to have been happy in spite of the fact that her father, a furniture designer, died when she was three years old. She graduated from public high school and after two years of college left to get married. This marriage lasted four years, ending in divorce when she found her husband having homosexual relations. There were no children by this marriage.

Two years after her divorce she married Glen's father, and in six months became pregnant with Glen. This pregnancy was not planned, but she reported that they soon became very happy about it. Although her husband wanted a boy, she had no preference. Her health was better than usual throughout the pregnancy. She was twenty-nine at the time of Glen's birth.

She described herself as "quick tempered," but she felt that her anger was short-lived. It was reported that she felt she was not "good mother material," as she was impatient and had had fantasies in which she had killed Glen.

Both parents had been employed in a variety of commercial enterprises. At one time they worked together promoting a vitamin product.

There were no siblings in the family.

Birth Record

A review of the hospital record indicated that the antepartum course of the pregnancy was complicated by a hospital admission six weeks prior to delivery for antepartum bleeding of undetermined origin. Gestation was forty weeks; the duration of labor was seven hours; the delivery was spontaneous; the presentation was vertex. A local anesthetic was administered, together with gas and oxygen. The delivery was complicated by the premature rupture of the membrane at the onset of labor. There were no postpartum complications reported.

The infant's birth weight was six pounds, twelve ounces, and he was described as an apparently normal male.

Infancy (First-Second Years)

For three weeks Glen was breast fed but his mother reported that the supply "gave out." He cried excessively, day and night, for the first four months although his mother stated that there were no specific problems associated with bottle feeding. He seemed ravenously hungry even though he was on self demand feedings. Often he would awaken hungry an hour or so after eating, and if he did not have a bottle immediately, he would become so upset and excited that he could not be quieted. Tranquilizing suppositories were tried but with little result. During this time mild episodes of diarrhea were also reported. His first tooth erupted at four months.

Both parents reported that they were exhausted when, at the end of his first four months, he began to cry less; however, at six months they became alarmed when he began to rock and bang his head.

Glen's mother reported that he sat without support at four months, stood without support at twelve months, walked with support at twelve months, walked independently at fifteen months, and climbed stairs at two years. She felt that he was a very sure-footed and well-coordinated child.

Glen was described as an unresponsive infant. He smiled rather late, and although he raised his arms to be picked up he did not appear to enjoy body contact. His mother said that she was unable to differentiate between his screams of hunger and pain. Linguistically, there was a complete absence of a developmental process beyond the infantile vocalizations of coos, laughs, and squeals. Although he did not respond to loud noises, his mother reported that he recognized some familiar environmental sounds and she felt that he generally understood when she spoke to him.

At a year and a half, his parents first recognized the asocial quality of his behavior. His father, upon returning home after a week's absence, reported that Glen did not seem to notice him at all. In retrospect his parents recalled that generally he paid little attention to people.

Because of his stormy infancy and his parents' concern, Glen was referred by his pediatrician for electroencephalographic studies when he was one year and eleven months old.

Electroencephalographic Studies

> "Impression.--The child was given sedation but failed to sleep. Scarcely more than ten seconds of legible records were obtained; this appears normal. Such a brief recording is

> entirely unsatisfactory and no opinion on this test is warranted."

At two years and one month, a second attempt was made. The report read as follows:

> "14 per second activity predominates anteriorly. The left occipital and left central patterns show high amplitude compound and 2 per second waves. These were also present to a lesser extent in the right occipital pattern, at times this grossly slow activity appears in all areas.
>
> "Impression.--Mildly abnormal pattern because of asymmetry between the hemispheres. Slow frequencies like those seen in the left occipital pattern are normally seen in all areas of the head during sleep. The relatively lower incidence in the right hemisphere may possibly indicate an electrical disturbance in the right hemisphere. The nature of the abnormality is not apparent."

Third Year

When Glen was two years and eleven months old, his pediatrician referred the family to a large, urban clinic for a psychiatric consultation.

Psychiatric Evaluation

> "Glen was referred to my office because of his failure to speak. He made oral noises, but no words have been said. He understands what is said to him and makes his wants known by gestures. He has been an overactive child, and has been given Miltown for the past year. If he does not have this he will wake up after an hour of sleep. . . . He is very easily upset over trifles--shakes and cries. . . . He is still taking the bottle. No G. I. symptoms except for a few mild episodes of diarrhea. . . . Mother had just begun toilet training at the time of the referral but had not made any progress. (She was advised not to press him on this subject.) All he wants to do is play in the toilet bowl. . . . Head banging has begun again in the last few weeks rather mildly. He usually bangs his head against a soft pillow. He had a certain old blanket he carried around with him and sucked constantly--was furious when the mother washed it. There has been considerable masturbatory activities. He rubs himself on the rug. The mother became embarrassed about this and got him to stop. No fears have been noticed.
>
> "Health has been remarkably good. He had always been strong and well. . . .

"He has no particular choice in play materials except that he likes little things. He puts them in his mouth, holds them for awhile, then spits them out, never swallows them. He is good at gross muscular activity. He has begun to roller skate, uses slides and monkey bars--if his feet are held he is able to stand on his head and walk on his hands for 45 minutes at a time.

"When first seen Glen was a blond child who separated easily from his mother--paid no attention to me, ran into the office and made awkward dives at objects. He seemed very tense, had an unhappy facial expression, was overactive, shifting rapidly from one thing to another. His movements were awkward, although he could do quite a few things. He was quite frustrated when he could not handle things that he wanted to. The only sounds he made were a few grunting sounds. During the second interview while he seemed less tense he suddenly began to cry without apparent provocation and continued to do so for the rest of the hour although he continued to handle objects and eat cookies. His hand movements are unusually awkward.

"Both physical and neurological examinations were entirely negative. Psychological examination was not attempted since there was little probability that the test results would have validity.

"Glen was started in nursery school sessions (2:11-3:7) and has shown considerable response to these sessions. The first noticeable results were that he became less active, and happier, and the Miltown were cut down from six to only one at bedtime. He has slowly become relatively responsive to the teacher and now likes to sit on her lap to be cuddled. His play is quite perseverative, but he has gradually used a greater variety of materials. . . .

"He has been seen by me at intervals for observation. His mother feels that he is making a greater variety of sounds and that he is becoming affectionate with her. This was not noticeable at the most recent interview. His play seemed perseverative, mostly concerned with water and paints, but he looks much more relaxed; his span of attention is longer. His facial expression is happier.

"Both parents, but especially the mother, seem unable to face Glen's problems and take an overoptimistic view of the future, although they have been told that the condition is quite serious and that even with the therapy we cannot promise a satisfactory result. Attempts have been made to start case work therapy with the parents, but they keep putting off and finally it came to the point that they felt that they were unable to meet this on a private basis.

"Impression.--Childhood schizophrenia. This child has a severe disturbance with relatively poor capacity for response. Prognosis is very guarded.

"Recommendations.--Continued nursery school work, individually and in the group. To be seen periodically by psychiatrist for observation. Both parents to have case work treatment."

Fourth and Fifth Years

On the recommendation of the psychiatrist, the family continued to be followed by the outpatient psychiatric clinic for a two year period. Concurrent with Glen's attendance in the psychiatric clinic's nursery school program, his mother was seen individually by a social worker and his father was enrolled in group therapy. (3:7 - 5:6)

The nursery school teacher made the following observations:

> "When first seen Glen was a well-built child with unusually developed leg muscles, a worried old man look, restless, irritable, and diffuse. He constantly climbed over everything. His walk was so staggering and uncoordinated that he was referred to a neurologist who stated that there was no evidence of an organic disease of the nervous system.
>
> "Glen appeared unable to hold anything in his hands. This, combined with his hyperactivity, made contact through the use of materials limited to their use by the teacher and Glen's occasionally watching her. . . . During this period Glen cried most of the time. He would rock back and forth, standing, with his hands behind his back. Finally Glen accepted the teacher's hand and seemed comforted. His general use of his hands improved. Glen has always liked to be physically moved --swung, turned upside down, etc. which also comforted him. During this time Glen would cry on arrival and when leaving, but never in between. He began to smile. . . .
>
> "During this past year Glen has been more responsive and directed. He is able to hold objects in his hands and able to communicate a preference to an adult (he will open the refrigerator door, pull one to it, and point out a selection) . . . . His crying during sessions is intense and enraged. When he is not crying he seems more relaxed than before and able to listen and follow simple directions such as, "Take my hand," or "Go into the room." These must sometimes be repeated. . . .
>
> "The progress with Glen has been slow, but he has moved. His crying and use of the baby swing is about like a 6 to 8 month old. Glen pulls the teacher's hair, explores her mouth and face. He has the fleeting baby smile of the 6 month old. His walk is not so uncoordinated."

In a letter seeking placement at Seaview when Glen was five years and two months old, the case worker said of the parents:

> "Both parents have greatly benefited from their weekly interviews. . . . Each has gained many insights into their own disturbed marital relationship and parent-child relationship. Theirs has been a painful growing recognition of their glorified, unreal and infantile dependent relationship upon one another. They have each been helped to 'take stock of' their combined and individual strengths and weaknesses. And in a steadfast, well-motivated and more realistic approach are working hard together toward a resolution of their many difficulties together and are emerging as more mature, aware individuals more capable of sharing the responsibilities of caring for their child and the attendant problems therein."

Two months prior to his admission to Seaview when Glen was five years and four months old, he was referred by the psychiatric clinic for an electroencephalogram as a "schizophrenic child with seizures."

Electroencephalographic Report

> "During the tracing the patient had three clinical seizures where his eyes were open for a time and then followed by what appeared to be generalized twitching. During this time high voltage slow waves at about 1-2 per second were seen over the two hemispheres.
>
> "Impression.--Throughout the tracing there was a large amount of high voltage waves and occasional rhythmic activity at 1-4 per second over both hemispheres. There are occasional bursts of high voltage irregular sharp waves at about 3 per second at times with a spike component over both hemispheres. There is no evidence of the focal lesion. The E.E.G. shows some diffuse abnormality with intermittent paroxysmal hypersyncronous bursts of the type seen in epilepsy arising deep in the brain."

Admission to Seaview

When Glen was 5:6 he was admitted to Seaview for residential care.

In Seaview's pre-admission questionnaire, Glen's mother provided the following information regarding his status. He was not toilet trained, had one bowel movement a day, and was enuretic.

He had no known food allergies. Although he would eat anything with his fingers, he preferred to be fed. In dressing and undressing he required complete assistance. Habitually, he rocked himself to sleep in a rocking chair. He was an extremely hyperactive child whose favorite activities were playing with strings, wires, and wheels.

Psychiatric Consultation

Glen was seen a week after his admission by the consulting psychiatrist who made the following report:

> "He appears to be of average height and weight for his age, asthenic built and rather transparent skin, with veins visible along his forehead. He had not been sleeping too well, is extremely overactive, has dark circles under his eyes, and appears somewhat fatigued. Although he waves his hands in an almost athetoid-like gesture, he appears to have good eye-hand coordination and grasps and picks up objects accurately. He did a good deal of rather aimless wandering around the playroom picking up, mouthing, and dropping many objects. For the most part, when he dropped these toys (e.g., wooden spools) either from his hand or from his mouth, he paid no further attention to them, but occasionally he would come back to such an object later and pick it up again. He did a good deal of rocking usually with an object in his mouth, occasionally with a toy in both hands, thrusting one leg forward with either one or both hands behind his back and rocking forward bending at the waist. He placed every object he touched into his mouth, and occasionally appeared to smell objects. During the time he was alone with me in the office, he was never more than a few seconds without an object in his mouth. When he first entered the room, he picked up a wooden block, put it in the mouth of a Humpty Dumpty doll on the table, then put it into his own mouth. For the most part, he looked at objects on the shelves, on the floor, or about the room with only rare, fleeting glances in my direction. He responded to his name, however, and occasionally circled closer to me when I called to him to come to my chair. Once or twice he allowed himself to be picked up and held and stroked, but on these occasions he soon wriggled out of my arms and returned to his rocking, picking up and mouthing objects.
>
> "I attempted to get his interest by showing him how I fed the doll, placing a round, cookie-like object in its mouth. He glanced only very briefly at this, turned his attention to several other things, but later weaved his way

back to my chair, quickly darted for the disk and put it in his own mouth. His smile, which he once turned spontaneously toward my face, was very fleeting.

"At the beginning of the session he had pulled me toward a package of cookies and had eagerly accepted and eaten one which I gave him. Later I observed his pleasure in taking food and milk directly from the administrator's hand. At this time, he tried to push away the food with his own hands and seemed to prefer to eat directly out of her hands, approaching the food with his mouth open, hands to his sides. He tried to eat an apple in a plastic bag without removing the bag, and even held the apple, eating part of it in a curious manner, throwing it away after taking a bite, later retrieving it, taking another bite, flinging it from him, etc. . . . The most striking characteristics of his behavior today were his extreme avoidance of direct contact with people, his extreme overactivity, marked oral approach to all objects, and his autistic rocking behavior. He did not utter any intelligible words but said "ee" . . . in an effort to persuade the adults to give him something from the food counter.

"Impression.--Atypical child with marked autistic features and no speech. Prognosis very guarded.

Sixth and Seventh Years

Residency at Seaview

The following outline of Glen's behavior in the milieu of Seaview was compiled from the direct observations of the research staff and an examination of the school records covering the two years and three months of his residency. (5:6 - 7:9)

Activities of Daily Living

Eating.--There was little demonstrable change in Glen's eating patterns. His waking hours were dominated by an endless pursuit of food. His appetite was insatiable. As long as food was available, he would not stop eating until he vomited. If left to his own devices he crushed food, smeared it, and scattered it about. He had to be fed in order to prevent him from overeating and because of his excessive manipulation of food. He noticed even the smallest particles of food on the floor towards which he he would dart and, with great precision, would pick them up and swallow them quickly.

He indiscriminately ate whatever he found in the grass or on the ground, ingesting a great many nonfood items including grass, leaves, dirt, sand, his own and other children's feces, with no differentiation for their edibility.

Sleeping.--Except during periods of illness, Glen slept soundly on the average of ten to twelve hours nightly. Shorly after his evening bath he would be put to bed and he would rock himself to sleep within half an hour. With few exceptions he continued to wet his bed nightly.

Toileting.--Glen continued throughout this period to be incontinent. Because of the tremendous frequency of his urinations, it was most unusual to find him dry. There were extensive periods in which he would have prolonged bouts of diarrhea, possibly related to his ingestion of nonfood items, and several occasions when his rectum became prolapsed in relation to either severe diarrhea or constipation. He would indiscriminately handle, eat, and smear his feces.

Dressing.--His extreme hyperactivity made it most difficult to dress Glen. He was completely unconcerned about wearing clothing and was unable to assist when he was being dressed. From time to time he would pull off some of his clothing, especially his right shoe. He was frequently seen fingering and mouthing articles of clothing.

Motor Behavior

Choreiform movements were seen in all areas of performance.

His fingers were frequently overextended while his hands were in constant twisting agitation. He would repetitiously pick up an object, throw it on the floor, and pick it up again.

His gait was variable; at times he walked in a lurching, stumbling manner with uncoordinated arm movements. By contrast, when he seemed calm and rested, he walked surprisingly well with the exception of a marked pronation. Often he was observed propelling himself about, rocking from the waist, while thrusting his right leg forward and dragging his left leg behind, with his hands either in wild agitation or clasped behind his back. When he was excited during periods of distress or pleasure, he would repetitiously jump up and down. Of the available playground equipment, he would invariably be found using the swing in a modified form of rocking. He readily climbed on furniture and ascended stairs with alternating feet; however, he was never seen descending stairs with reciprocal movements. He was unable to participate in the activities of Seaview. When toys were available they were used in a tactile-oral manipulative manner.

Linguistic Functioning

Tape recorded samples of Glen's vocalizations were made in the various dimensions of his milieu at Seaview. Glen vocalized but did not produce any words. The quality of his vocalizations communicated his mood. His vocal productions were exclusively primitive, lacking in consonant sounds. Vowel sounds were heard in primitive crying and whining. Squeals of delight or excitement were occasionally evoked. He expressed his needs through diffuse manipulations of those in charge of his care. He would run to any adult and attempt to pull them towards the kitchen where he usually was fed.

Asocial Behavior

The complete absence of social learning pervaded all areas of Glen's daily living. This, combined with the total absence of speech, extreme hyperkinesis, and prolonged periods of rocking made him appear severely handicapped and inaccessible.

Response to Frustration

The totality of his reaction and the diffuse, disorganized manner in which Glen responded to frustrations prevented the identification of the nature of the frustrating stimuli, with the occasional exception of those frustrations associated with his drive to eat. His frustration and discomfort were identifiable only through the intensity of his crying combined with increased hyperkinesis, frequently marked by vigorous rocking. When distressed, he would sit on the floor and rock, executing an arc of approximately thirty-five degrees as he pounded his back against a wall.

Response to Environmental Change

As Glen's behavior was so fragmented, disorganized, and diffuse, the constant changes which occurred within his environment provided no identifiable responses.

Response to Children

Glen did not engage in any socially meaningful play. Although his limited contacts with other children were by accident rather than design, he was observed circling about, poking, touching, or smelling another child. When in close proximity to an aggressive or enraged child, he seemed totally unaware of the dangers involved. Even after being struck by some child he seemed to lack the integrative capacities to avoid further contact.

Response to Adults

Glen usually sought contact with adults by gross manipulations of pushing and pulling them in a disorganized way. Because of the intensity and unpredictable nature of his hyperkinetic behavior, adults found it difficult to manipulate him in any area of activity.

Health and Physical Status

Glen had no contagious diseases or major illnesses during his residency at Seaview. As he was so disassociated from his environment he experienced numerous minor injuries. His most frequent problems were of a gastrointestinal nature such as vomiting, diarrhea, and constipation.

After eight months of care at Seaview, Glen's parents took him back to the referring psychiatric clinic for reassessment.

Psychiatric Reassessment

> "Glen appeared much healthier physically, taller, stockier, and with better coordination in walking. He seemed much less anxious. . . . He appeared to be more relaxed and to be somewhat happier. His teacher noted that he did exactly the same things with her that he had done previously." (6:2)

A month prior to the period of experimental therapy, Glen's height and weight were recorded as fifty and one half inches and sixty pounds. (7:0)

The day before therapy commenced, Glen was taken to the local pediatrician because of chronic diarrhea and a prolapsed rectum. (7:1)

Pediatric Evaluation

> ". . . His weight was fifty three and one half pounds, and his height was forty-nine inches. Eyes, ears, nose and throat were not remarkable. Teeth appeared to be in a good state of preservation. His heart sounds were of normal rate and rhythm. No murmurs were heard. Blood pressure was not taken. His lungs were clear, abdomen was soft, and no masses were palpable. His skin was normal. No peripheral adinopathy was present. Vollmer T.B. patch test was negative. Urine was negative for albumin and sugar and phenoalanine. Hemaglobin was 84 percent and W.B.C. 11,400, with a chamber differential of 52/48.
>
> "The attendants of this boy had noted excessive hyperactivity and compulsive eating which in the absence of food became a true pica. Chronic diarrhea was present, and on one occasion, a prolapse of the rectum.
>
> "Glen had been receiving 45 mg. of Compazine syrup daily. When seen three months later he showed suggestive myoclonic jerks, and was placed on Mysoline 50 mg. three times daily, with a gradual reduction of the Compazine. Mysoline was increased to 150 mg. three times daily with Atarax, 2 teaspoons three times daily. On this last combined medication he appeared more agitated than before. Therefore Mysoline and Atarax were omitted gradually. Sparine was substituted in the dosage of three teaspoons three times daily. On this last medication, he seemed the least agitated and hyperactive but by no means a calm or subdued individual.
>
> "Vidaylin one teaspoon daily was given throughout the time that I was seeing this boy. . . ."

Experimental Therapy

Glen was a handsome, sturdy, seven year old, whose general appearance was marred only by the transparent quality of his skin, revealing the blueness of the veins about his face and head. He presented an incongruous picture; while physically he appeared very normal, his responses to the world were comparable to those of a six month old infant. Although he produced a variety of vocal noises, he had no speech.

During the forty-four sessions of relationship therapy there rarely were periods in which Glen could be described as content. He usually presented the extremes of emotion--either joy or acute distress. He was assigned to the female clinician.

For the first three months of therapy, Glen received 45 mg. daily of the tranquilizer Prochlorperazine (Compazine). He was then placed on 150 mg. daily of the anti-convulsant Primidone (Mysoline) and 36 mg. daily of the antihistamine Benadryl Hydrochloride, with the gradual reduction of Compazine. The anti-convulsant Trimethadione (Tridione) 150 mg. daily, and the tranquilizer Hydroxyzine (Atarax) 20 mg. daily, were then prescribed. This medication was withdrawn and Glen was placed on 20 mg. daily of the sedative Promazine Hydrochloride (Sparine) plus 150 mg. daily of the anti-convulsant Primidone (Mysoline).

First Month (1st through 12th session)

In the initial session Glen appeared euphoric. He seemed thoroughly delighted by all stimuli whether animate or inanimate. Extensive pleasurable vocalizations of laughter, squeals, and giggles were heard as he fell upon the play materials and the clinician. He darted about the room, twisting and turning his body and hands in a disorganized, hyperkinetic manner. He rapidly and repeatedly picked up, sniffed, licked, and mouthed all the available materials. He would mouth and bite large objects, and when small objects such as crayons or clay fit into his mouth, he would chew them and attempt to swallow them. This behavior reflected the indiscriminate nature of Glen's orality as his contact with objects was solely determined by their proximity. He exhibited no selectivity as it did not seem to matter which end of a pacifier or a nursing bottle was chewed. As objects dropped from his mouth or hands to the floor, he neither followed them visually nor attempted to retrieve them, for as fast as he would drop one object he would grab at something else.

Throughout this session, Glen frequently initiated contact with the clinician through smiles, giggles, and direct eye contact as he leaned, fell, or climbed onto the clinician as she sat on the floor. Although frequent and unpredictable, these contacts were brief and fleeting. With the same rapidity with which he initiated the contact, he would suddenly terminate it. While squirming about in the clinician's lap he pursued the same oral-tactile behavior that he exhibited with inanimate objects--poking, pulling, smelling, mouthing, as well as attempting to chew the clinician's hair and clothing. All verbal attempts to set limits on Glen's indiscriminate biting and chewing of the clinician's hair were to no avail. He was completely unresponsive to verbal communication. The clinician had to physically restructure the situation in order to protect herself from the pain involuntarily induced by Glen as he used her hair as a depersonalized play object.

Without forewarning of any kind, such as a pause in his hyperkinetic activity or any noticeable change in his vocal output, Glen would have a bowel movement. Because he was seldom provided with adequate training pants or protective rubber pants, his feces would drop out of his shorts and as he moved they would be scattered about the room. In the same hand to mouth pattern prevalent in all his activities, he would grab at his feces, press his fingers against his nose, thus smearing his face. The clinician would guide him into the bathroom, remove his soiled clothing, and sit him on the toilet. As she reached for tissue to clean him, he would jump off the toilet, grab up his soiled trousers, and dash back into the playroom dropping a trail of feces behind. As it was impossible to contain him on the toilet while cleaning up his feces, it was necessary to have additional assistance whenever this occurred.

The euphoric quality of Glen's behavior seen in the initial session continued during the ensuing weeks with the exception of a few sessions in which a complete shift in mood occurred. On one occasion he came to therapy in a highly anxious state, crying and whining, seemingly distressed by bodily discomfort. A prolapsed rectum, probably associated with a gastrointestinal upset (acute diarrhea) was observed during the regular toileting episode which consumed some part of every therapy session. The staff at Seaview felt that this chronic condition was caused by Glen's frequent bouts with diarrhea precipitated by his ingestion of nonfood items.

Because so much of his activity centered about elimination, detailed observations associated with toileting were made. Frequently he would arrive for therapy with his pants soaked through with urine. The clinician maintained a supply of fresh clothing in order to expedite the necessary changes. When he was placed on the toilet he would squirm about, wildly agitating his hands, occasionally flipping his penis about, immediately followed by the sniffing of his fingers. Often he would jump off the toilet seat and dart about the room urinating and defecating as the need arose. He did not display any concern about being wet or soiled as he was observed sitting or rolling in puddles of his own urine before the clinician had the opportunity to clean it up.

Hyperactivity dominated all his behavior regardless of his mood. During periods of distress or agitation he would cease his aimless rushing about, sit on the floor leaning against a wall, and with his hands between his legs he would violently rock. These agitated states were accompanied by tearful whining, crying, and screaming in which no amount of affection or mothering remediated his distress. The precipitating factors were obscure because of the primitiveness of his communicative ability and the diffuseness and fractionated nature of his behavior.

When Glen was happy he particularly enjoyed manipulating soft, tactile objects such as towels, rags, and stuffed animal toys which he would flip about, rotating them over and over in his hadns. He would become very excited and emit shrill squeals of delight. Choreiform movements were noted in his handling of these play materials, especially in the overextension of his fingers while repetitiously dropping an object, picking it up, and dropping it again. His only use of toys was to keep them in a game of continuous movement.

When in an excited mood, Glen would dash about the room involuntarily crashing into furniture or the clinician. Exhibiting no signs of discomfort and without a moment's hesitation, he would continue to rush about as if he were intoxicated with the idea of space. Only when his accidents were of major proportions was there any observable response. A delayed but intense reaction occurred when he accidentally poked his finger into his eye or cracked his head on furniture. Unable to localize his discomfort, he would wildly thrash about in response to intense painful stimuli in an overwhelming, total, and diffuse reaction.

Never having acquired any speech, Glen relied on gross manipulation and primitive vocalizations to communicate his needs. Although the specifics were rarely discernible, the clinician was gradually able to associate his gross behavior of jumping up and down, pushing, and pulling, as vague expressions of his wants. The only clear-cut communicative effort which he ever demonstrated was in expressing his desire for water by waving a plastic glass in the direction of the clinician.

Several examples of his inconsistent responses to auditory stimuli were observed during this period. He exhibited no startle response when balloons were broken, or when a variety of environmental sounds of maximum intensity occurred. In contrast, when the clinician spoke to him, he invariably demonstrated his awareness of vocal sounds by turning toward her, frequently followed by his initiation of physical contact. It was further noted that when the clinician was silent there was a marked reduction in the extent to which he sought physical interaction. Regardless of what the clinician said to him, her speech seemed to serve solely as the stimulus for physical interaction. This singular response to the clinician's voice was observed during the entire course of therapy and indicated his complete lack of comprehension for the meaning of words.

During this month the clinician attempted to become involved with Glen at his level of functioning. Intuitively she began to sing and vocalize to him in an effort to establish contact. Although attempts to participate with him in his rocking and gross body movements were made, the feasibility of using such a technique was limited because of his size and extreme hyperkinesis.

Second Month (13th through 24th session)

Glen's complete lack of geographic orientation was demonstrated by his total confusion and inability in finding the therapy room. It was necessary to lead him by the hand to and from therapy as he would wander off in any direction. When leaving therapy, he persistently exhibited confusion with regard to which door served as the exit as he frequently attempted to leave via the bathroom or closet doors.

Although he was able to ascend stairs with alternating feet, he showed poor motor development in descending as he habitually used the infantile pattern of one step at a time.

Glen accepted and gave affection freely within the capacities for interaction usually found in a six month old baby. The clinician was able to communicate her acceptance of Glen by providing him with copious amounts of affection at his infantile level. He continued to use the clinician for his introcentric needs through initiating gross body contact by actively seeking cuddling, mothering, and tickling. He seemed to be limited in his perceptions of the clinician, using her solely as a source of infantile gratification.

During this month no variations were noted in the intensity of his hyperkinesis. Some part of every session continued to center about elimination and toileting. Because of his incontinence, it was the staff's general practice to limit his liquid intake; however, in the permissive atmosphere of therapy, he discovered that he could drink as often and as freely as he wished. Immediately upon arrival he would seek the clinician's aid in getting a drink of water. This pattern became a permanent part of the therapy experience. As it was the constant effort of the clinician to encourage independent functioning and because Glen's strivings for water were so strong, it seemed especially meaningful to try to help him to become independent in this task. As a consequence of this particular activity, some of his specific problems became more apparent. Prominent choreiform hand movements were seen as he stood before the sink holding the glass and flailing his hands about in the general direction of the faucet. His generalized hyperactivity, constant overextension of his fingers, and muscular rigidity made it extremely difficult to direct his reach or grasp. Despite repeated presentations of the visual model and actual manipulation by placing his hand on the faucet handle, he never learned how to turn the tap on or off. He presented extraordinary difficulties in positioning the glass beneath the running water as he would either invert it, turn it on its side, or set it on top of the faucet. Completely unaware that there was no water in the glass he would attempt to drink from it. In order to prevent further frustration, the clinician always provided him with a full glass of water. Anticipatory sucking and swallowing movements were frequently observed prior to actual contact with the glass. He used a two-handed approach when holding the glass, and it was necessary for him to extend his arm in order to release his grasp. Unless the clinician took the glass from him when he had stopped drinking, he would spill the remaining water. An overall interest in water play was seen at the sink and toilet bowl as he would frantically and excitedly plunge his hands and arms into the water and splash about.

His visual acuity was not suspect as he repeatedly exhibited good skill in spotting minute particles of nonfood items on the floor such as bits of clay, pieces of broken balloon, splinters of wood, and lint which he immediately would snatch up and quickly ingest. Beyond this aberrant hand-to-mouth pattern, Glen never demonstrated any functional or social use of his hands.

Third Month (25th through 35th session)

During this period there were degenerative changes in Glen's behavior which seemed to be related to the changes taking place in his environment. Whereas previously there were only occasional periods of distress, the converse was now prevalent. More often than not he would arrive for therapy in a highly agitated state, inconsolably whining and crying, and spend the major part of these sessions consumed in rocking. This regressive pattern dominated the therapy periods. The clinician sought to discover ways in which she might dispel his distress, but to no avail. For fleeting moments he would temporarily accept her overtures to comfort or console him, only to slide from her lap and become swallowed up in his distress. Large portions of each session continued to be expended in tending to the problems associated with his incontinency.

During one of the rare moments in which there was a brief reduction in his acute distress, the clinician attempted to maintain the thread of contact which had been previously established. Glen exhibited fleeting but marked interest in the bubbles which she blew for him. He followed them visually, occasionally breaking them against his face while attempting to mouth them.

Fourth Month (36th through 44th session)

This month continued to be characterized by the general distress which pervaded Glen's entire waking hours. With a change in his medication from a tranquilizer to an anti-convulsant drug, there were observable changes in his behavior. He manifest excessive drooling; bizarre movements of his mouth including the chewing of his tongue; the tossing of his head backward along with the arching of his back. There was a generalized increase in the athetoid-like movements accompanying his persistent hyperactivity. Whereas previously he had been in constant movement, there were now moments when he would cease all activity and vacantly gaze off into space for five or six seconds. This was immediately followed by an explosive resumption of fragmented turmoil.

In his constant state of distress, the possibility of maintaining contact became exceedingly remote. In order to physically maintain Glen, it was necessary to introduce the male clinician into the regular sessions. No marked changes in Glen's behavior were noted with the presence of two clinicians; however, the male clinician was able to satisfy Glen's need for movement by physically engaging him in rough and tumble play, thus redirecting his all-consuming need to rock.

During this month the research staff was informed that Glen's parents would shortly withdraw him from Seaview; therefore, therapy was gradually terminated with a final observation occurring at the beginning of the fifth month.

Case Summary

Medical History

It was noted that Glen's mother presented antepartum bleeding of undetermined origin six weeks prior to her confinement, and that the delivery was complicated by the premature rupture of the membrane at the onset of labor. Glen's first four months of infancy were complicated by excessive crying, insatiable hunger, and gastrointestinal upsets. Because of his irritability "quieting" drugs were used, but to no avail.

In the absence of speech and with a complicated developmental history, Glen presented a difficult diagnostic picture. Two electroencephalographic studies were made; one of which was considered "mildly abnormal." With a variety of bizarre and stereotypic behavior patterns, and as the child of parents with neurotic if not pathological histories, Glen was diagnosed and treated as a childhood schizophrenic. After two and a half years of treatment based on this psychiatric diagnosis, a third electroencephalogram was done in which positive findings akin to epilepsy were recorded. However, the diagnosis of an infantile psychosis was maintained.

Previous Therapy

With the emphasis on psychotherapy for his parents, Glen was followed for two and a half years in the nursery school program of a psychiatric clinic. Because of his minimal progress and the overwhelming task of continued maintenance within the home, institutionalization was recommended.

Residency at Seaview

When Glen was five and a half years old, he was admitted to Seaview.

During the two years and three months that Glen remained at Seaview, he continued to be completely dependent upon adults in all activities of daily living. Because of this and his continued incontinence, the primary problem was one of maintenance and control.

As seen in the milieu of the institution, hyperkinesis pervaded all areas of his functioning. The most prominent feature of his behavior was the stereotypic pattern of propelling himself about thrusting one leg forward, rocking, and dragging the other leg behind, with his hands in wild agitation while in perpetual pursuit of leaves, grass, and twigs. Because of his absorption in his stereotypic behavior patterns he was isolated from his environment and appeared especially remote and inaccessible. Periods of distress accompanied by crying and whining were frequent and prolonged.

Experimental Therapy

Observations and impressions gained during the forty-four sessions of experimental therapy were as follows:

Nature of the Relationship

The formation of a relationship was possible through establishing contact at the primitive level of gross bodily interaction and through a variety of vocal activities for auditory stimulation such as singing, humming, and speech. Contact was successfully established when the clinician responded to Glen's need for gross bodily movement by engaging him in rough and tumble activities. Only brief periods of this shared activity were feasible because his size and extreme hyperkinesis exceeded the clinician's strength and energy. His initiation and pursuit of physical contact and affection seemed insatiable. As his communicative efforts were limited to body language, the furthering of the relationship was dependent upon this form of interaction.

A major portion of each and every session revolved about problems of elimination. Unfortunately, during the course of therapy Glen's status degenerated; thus, it was necessary to provide the additional energies of the male clinician.

Perceptual Processes

Glen's responses to external stimuli which were observed during the process of therapy were as follows:

Olfactory.--Glen constantly sniffed his hands, fingers, and objects as he pressed them against his nostrils. Whether he used the sense of smell to perceive or discriminate objective reality was not ascertained. It was conjectured that this stereotypic behavior pattern might be solely an autoerotic activity sensitizing and stimulating the erectile tissue of the nasal membrane.

Gustatory.--There was no evidence of any discriminatory process in this sensory mode as he demonstrated no food preferences or aversions as well as an extensive pattern of ingesting any nonfood items which could be swallowed. Although he was capable of chewing, he seemed to prefer to ingest food by sucking.

Tactile-kinesthetic.--Glen sought extensive stimulation through the manual and oral manipulation of animate and inanimate objects. Materials were never used meaningfully, only in a random, diffuse manner providing the maximum kinesthetic stimulation. He exhibited a preference for textured fabrics such as stuffed animal toys, towels, and clothing, which afforded the greatest tactile stimulation. There was an all-pervasive need for oral stimulation as everything was brought to his mouth, and if it could not be swallowed, he would suck or chew it.

Response to Pain.--Whereas painful stimuli of moderate intensity produced no visible response, intense painful stimuli elicited delayed, catastrophic, gross bodily reactions. It was as if he were unable to localize or identify his discomfort for lack of proprioceptive feedback.

Visual.--There was no reason to suspect his acuity as he was able to find minute particles of dirt or food within a range of three feet. Glen seemed especially alert and attracted by any movement, but his focus was fleeting.

Auditory.--Inconsistent and delayed responses to auditory stimuli were seen throughout. Environmental stimuli of maximum intensity consistently failed to evoke a startle response. There was, however, occasional but delayed responses to environmental stimuli of minimal intensity.

Motor Behavior

Glen engaged his entire body in continuous activity.

Athetoid-like movements were seen in all areas of performance. His hands were in constant agitation with his fingers overextended. He exhibited the need to extend his arm in order to release his grasp.

His gait was variable. At times he walked in a lurching, stumbling manner with a good deal of incoordination of his arms and occasionally bumped into things. When calm and rested he walked surprisingly well, but with a slight pronation. He was able to ascend stairs alternating his feet, but descended one at a time.

The complete absence of any social learning severely impaired his motor performance. He was unable to use his hands in any purposeful manner, including the simple tasks involved in the activities of daily living.

Vestibular Functioning.--There was no evidence of any vestibular dysfunction as Glen sought and thoroughly enjoyed antigravity play.

Linguistic Functioning

Receptive.--There was no evidence that Glen understood any symbolic process. There were only vague responses to a combination of tone, volume, and gesture. There was a complete lack of understanding for the meaning of any phrase or word including his own name as he frequently responded when anyone's name was called.

Expressive.--An examination of his peripheral oral mechanism revealed no structural abnormalities. An apraxic quality was noted in the inefficient manipulation of his tongue when eating or drinking.

His only communication was the gross and vague manipulations of the adults in his environment. A singular, specific gesture communication was seen in the extending of a glass and whining when he wanted a drink of water. It was possible to interpret his moods through the quality of his vocalizations combined with the intensity of his activity. His emission of primitive vocalizations lacking in consonant sounds, appeared to be more reflexive than volitional. He spontaneously produced extremely high pitched vowel sounds not usually heard in human vocalizations.

Time and Spatial Orientation

Glen showed no awareness of temporal relationships. His complete confusion in spatial or geographic orientation was especially manifest in his inability to recognize the permanent properties of objects with the exception of the kitchen where he was fed.

Reaction Time

Glen's responses to sensory stimuli were severely depressed. They were either significantly delayed or absent. Usually he would overattend to anything that was in motion, particularly extraneous or peripheral movement.

Learning

Attention.--Glen's hyperkinetic behavior pervaded his entire being. He was highly distractible because of his overattention to movement. All of his energies were expended in random motor activity, severely limiting his opportunity for learning.

Imitation.--Glen did not imitate or integrate any visual, auditory, or kinesthetic models.

Memory.--He demonstrated a severely reduced capacity for memory functioning. Only the most primitive associational bonds related to feeding were conditioned. Even after being injured, he did not form the associational bonds required for self-preservation when physically threatened.

Problem Solving.--When confronted with frustration or the need to delay gratification, Glen's only response was rage and withdrawal.

Case History of Ronald

Date of Birth: 5/28/52

Family History

The following family information was abstracted from a social worker's summary report compiled when Ronald and his family were receiving treatment in a psychiatric clinic.

Ronald's father was of Jewish background. During his teens he was in psychotherapy for "adolescent problems." He was eighteen years old at the time of Ronald's birth. He rejected the baby at first but helped his wife to pacify Ronald when he had colic by devising an oscillating bed arrangement. It was reported that he appeared to be an obsessive, compulsive person suffering from periodic depression. Most of his problems continued to revolve around his relationship with his mother, "a driving, domineering writer and popularizer of Freud and a self-styled expert in child development." Although he was of superior intelligence, he was unable to sufficiently direct his energies to finish college and was employed in industry as an electronic technician.

Ronald's mother was of Protestant background. Her father was employed as a salesman, and her mother operated a nursery school. She was said to have experienced problems during adolescence and to have intermittently suffered periods of marked depression. Upon graduation from high school she received a four year college scholarship and planned to become a professional dancer. She became pregnant, however, during her first semester in college and subsequently left school to marry Ronald's father. She was eighteen years old at the time of Ronald's birth. After the birth of her son, she took some college extension courses and continued to study dancing.

There were no siblings in the family.

Birth Record

Although Ronald's mother reported that during her pregnancy she had fallen down a flight of stairs at a railroad station but had suffered no known complications, this was not entered in the hospital records. An examination of the hospital obstetrical notes indicated that the prenatal course was an uneventful, thirty-nine week term. The duration of labor was twelve hours and six minutes, and because of a prolonged second stage of labor with poor progress and pushing, outlet forceps were used. The infant was delivered with one loop of the cord about his neck, crying spontaneously. There was no information available regarding anesthesia. The mother's blood group was O positive, and serology was negative. An episiotomy and repair were performed. The postpartum course was uneventful.

The infant's birth weight was eight pounds and three ounces. He was described as a normal, full term, male infant, delivered without incident. A circumcision was performed.

The infant's hospital history was not available; however, the mother reported a severe bruise mark on his cheek which lasted five days. She also recalled clearly that, while in the hospital, she saw a young nurse tossing Ronald in the air and catching him before putting him down in his crib. From then on whenever he was placed on his back, she noticed that he would stiffen and rigidly extend both his arms. He seemed frightened and would become very fussy.

Infancy (First-Second Years)

As an infant Ronald cried and fussed a great deal. Because his mother felt unable to care for him by herself, the family moved in with the father's parents when Ronald was a few weeks old. The members of this extended family unit, father, mother, father's parents, and a school age sister, took turns staying up at night to walk the infant during periods of distress accompanying his irregular sleep patterns.

For the first four weeks Ronald was breast fed on a self demand basis. Because of his constant distress, his mother felt that he did not seem to be getting a sufficient amount of milk. For awhile she tried both breast and bottle feedings and then went exclusively to the bottle. As Ronald had such severe colic she was never sure whether he was crying from pain or hunger; therefore, she tried to establish scheduled feedings which she would modify by as much as a half of an hour. Although weaning from the bottle was begun at a year and a half, his mother recalled that it was "a long time" before he could drink from a cup with ease.

She reported that there were persistent episodes of vomiting and diarrhea. Although many pediatricians were seen for the complaint of colic, Ronald's early medical history was obscure as the family did not establish a continuing relationship with any particular pediatrician.

Because of his lack of speech development Ronald's family arranged to have him seen by a speech therapist when he was two years old.

Speech and Hearing Consultation

> "This child was seen by me on two occasions only. Two observations noted at that time were: the child had little or no opportunity for socialization; there seemed to be no desire to use speech as a tool in satisfying needs or modifying the behavior of others.
>
> "These were discussed with his mother. Some suggestions were made concerning the development of conditions that might give Ronald a greater interest and need to communicate. Although hearing appeared adequate, it was suggested that the child receive an otolaryngological examination. I believe the results of this examination were essentially negative. . . . My contact with the child and his family were all too brief to enable me to gain any degree of insight into possible etiological factors related to the speech retardation. . . ."

The following was the mother's report of the consequences of her visits to the speech therapist:

> "The therapist made the suggestion that I should not anticipate Ronald's needs and I should make him ask for what he wanted. That is, when he wanted a cookie he should be made to verbalize the desire. This technique met with a strange kind of success. By much prompting and withholding, I finally got Ronald to the point where he would make verbal requests, but it was always in a parrot-like fashion. I would say to him, 'Are you hungry?' 'Do you want a cookie?' Say to mummy, 'I want a cookie.' Ronald might then say to me, word for word, just exactly what I had said to him with no variation and always in a rather shrill, frantic way.
>
> "During this same period he began to develop temper tantrums--and severe ones. I relate this to the fact that he was frustrated by being forced to verbalize. I stopped taking him to the speech therapist--I'm not exactly sure why. I felt a certain frustration about the whole matter myself and that the root of the problem had not been reached. Also there was something about the type of speech patterns Ronald was developing which were vaguely disturbing to me. I had the sense that things were definitely not right and that some other type of investigation was necessary. Hence, the trip to other doctors, the sessions at the cerebral palsy clinic, and finally the psychiatric clinic."

Third Year

Because of the family's growing concern regarding Ronald's development, pediatric and neurological consultations were sought. The records of these examinations were not available; however, his mother recalled that both specialists suggested a possible diagnosis of cerebral palsy. The neurologist advised hospitalization for diagnostic evaluation. The parents rejected this recommendation because of the lack of rapport between the doctor and Ronald and the possible traumatic effects that such a hospitalization might have on him.

In view of the suggested diagnosis of cerebral palsy, Ronald's mother sought the services of the local cerebral palsy clinic where he was observed when he was three years and two months old.

Physical Medicine Evaluation

> "This child walks with feet everted and pronated, otherwise there does not seem to be any involvement in muscle power or joint range of motion. There is difficulty in having the child perform, as well as difficulty in speech.
>
> "Recommendations.--A corrective shoe is suggested, and a neurological evaluation."

Neurological Evaluation

> "This child's present difficulties include irritability; difficulty in walking, with pronation of both feet, more on the left than on the right sides; definite reluctance to speak although he is able to talk when he desires. The patient walks with some degree of incoordination, although he uses his upper extremities well. There is some evidence of pyramidal tract abnormality with a Babinski sign on the left side.
>
> "Impression.--It is felt that this child does have cerebral palsy secondary to anoxia at the time of birth.
>
> "Recommendations.--Walking and standing exercises as well as speech therapy."

Neuropsychiatric Evaluation

> "It is my impression that the orthopedic disability is minimal and from a physical rehabilitation point of view there is no need for any intensive therapy. My present impression is that there is need for evaluation and estimation of his psychiatric status such as an attempt to estimate the degree if any of organic brain syndrome. There are some features on the other hand which are suggestive of a possible schizophrenic type disorder, this being suggested by what appears to be autistic behavior."

The neuropsychiatrist's evaluation prevailed and the family was advised to seek psychiatric help. The parents then applied to a local family service agency, and were referred to a psychiatric clinic when Ronald was three and a half years old.

Based on a presumptive diagnosis of infantile autism, Ronald was treated by the clinic's psychiatrist twice weekly for the next two and a half years. (3:6 - 6:0) Concurrently, his mother was seen for treatment by a psychologist and his father was seen periodically in the clinic.

No neurological or laboratory studies were made during the course of Ronald's treatment.

Fourth and Fifth Years

Psychiatric Evaluation

The psychiatric summary report of Ronald's progress for the ensuing two and a half years was as follows:

> "Relationships to People.--When Ronald was first brought to the clinic by his mother, he seemed to be so aloof from her and to be so out of her grasp that he was apt to wander aimlessly throughout the clinic and she to follow along behind him but not really able to effectively influence his behavior. She would be seen to stand patiently beside him or behind him and take things out of his hand as he would pick them up. At the present time, she is actively in command of the situation and sees to it that he goes into the waiting room and takes

off his coat and rubbers. He is docile and it is rather apparent that there is some kind of communication going on between the mother and child at the present time. The mother now talks to him about what she is doing for him or with him. At home, now, she feels that she is in good contact with him and usually knows what he is doing and is able to see some meaning in his behavior. When they first started coming to the clinic the behavior at home was beyond her understanding, and usually ended in his having a temper tantrum for which he was put into his room alone. In present day situations when the mother feels under strain, she loses contact with Ronald and he is apt to wander aimlessly around and get into all sorts of precarious predicaments. . . .

"Ronald's relationship to me has changed considerably in the two and a half years. At first he was very aloof from me, and during his first temper tantrum I insisted on being near him and had my hand on his shoulder while talking to him soothingly or while playing the music box for him. Thus breaking into the pattern of his being banished when he has temper outbursts. He has gradually gotten much more attached to me and now holds out his hand for me when he sees me and wants to be near me and show some affection towards me. For many months he reacted to me as though I were nonexistent except to do his bidding, and then it was as though my hand did his bidding unrelated to me as an entire person. During the last few months he has formed a relationship with his father which both seem to enjoy. This consists of Ronald sitting in the chair with his father and having him read to him or tell him stories. The father comments that Ronald has changed in his physical posture. Whereas he used to be so stiff that it was uncomfortable to have him sit on a chair with you, he now will adjust his posture to the body contours of his father.

"Physical Development.--When Ronald first came to the clinic he looked very thin. There was a drastic change around 4:3 at which time he was on the stocky and obese side. . . . There were many ups and downs in his growth until reaching age five, since which time he has been growing steadily. . . .

"Motor Development.--Ronald was considered to have had some disturbance in gait along the nature of cerebral palsy. This was ruled out and his gait has improved a great deal. Most of the time he can walk now as a normal child, but when upset he tends to run and flap his feet while shaking his hands and rolling his head from side to side. He has gained considerable skill in the use of his hands and now is able to do such things as turn the water faucet on and off, and feed himself with a spoon. He still is reluctant to try to use his hands in the kind of play with toys which most children do. There seems to be some direct connection between the inhibition of the use of the hands and strong premature prohibitions against masturbation. At the present time he still has a prominent hand-to-mouth pattern in motor behavior, and most any object he picks up goes directly into his mouth. At times he demonstrates the difficulty he has in trying to give up his motor pattern for a more advanced one. For example, he was quite frustrated when trying to blow into the mouth of an accordion and no matter how hard he tried to blow into it, he could only bite it.

"Emotional Development.--Ronald is still rather tense and irritable and aloof from people, but not nearly as much so as he used to be. At the present time he has a relationship with several people, namely, his parents and his grandparents and his present therapist. His interests are still predominently oral gratifications and in wetting himself. Not from the bladder, but from pouring water down the front of him. . . . His mother reports that he now kisses people by sticking his tongue out to touch their skin. When very much frustrated he bites his left hand. This kind of frustration has diminished over the past few months, but the hand is still somewhat swollen and has scars on it.

"Speech.--Although Ronald has learned several words, his use of speech is quite unpredictable. When he seems calm and relaxed he can use speech much more readily than if he is upset. When he is given a candy whenever he wants it he generally does not speak, but when the gratification is delayed he sometimes can be encouraged to speak.

"Geographic Orientation.--. . . Ronald is well oriented within buildings and anticipates where he can find various supplies of candy throughout the buildings. There is strong evidence that he has mental images of people when they are not present, although he does not call out for people. He sometimes calls his own name as it would be heard if the other person were calling him.

"General Impression.--There is an unevenness in all areas and a tendency to be easily upset. His base line on the Vineland Maturity Scale has progressed four months in two and a half years of treatment. The most encouraging aspect has been the progressively improved relationships with people."

Social Work Summary

The following excerpt was taken from the social worker's report of therapy with Ronald's mother:

". . . The main problem in treatment has been one of helping her to develop more ego strength while at the same time helping her to function better as a mother and as a wife. Treatment has been successful in helping her to overcome her depressions. She has grown in ego strength, and she has become aware of her inner hostility and anxiety, but finds it difficult to express her aggression.

"During treatment the marital relationship, never good, continued to deteriorate. She stayed with her husband because of her dependency needs and he with her because of his. She found it easier to wrap herself up in the care of her son than to try to resolve her differences with her husband.

> From time to time her husband would rise up in righteous wrath because of her frigidity and isolation from him. He became periodically depressed and finally went for psychiatric treatment for himself after a series of accidents made him realize that he might injure himself. During treatment with a psychoanalyst, he came to believe that Ronald caused most of the difficulty between him and his wife, and pressed for placement of the child. Ronald's mother, more recently has accepted the need for placement."

Sixth Through Ninth Years

Admission to Seaview

When Ronald was six years and one months old, he was admitted to Seaview for residential care.

In Seaview's pre-admission questionnaire, Ronald's mother provided the following information regarding his status:

> "Ronald sleeps soundly at night--about ten hours. . . . He wets his bed and occasionally will have a bowel movement at night, smearing mostly with his feet. He will urinate standing when taken to the bathroom; however, he usually does not indicate this need on his own. It is frequently necessary to resort to suppositories as he withholds his stools. . . . He heartily eats most foods, feeding himself using a spoon or his fingers. . . . There are no known food allergies; however, he has had allergic rashes from time to time. . . . He is totally dependent on others for dressing and undressing. . . . He is hyperactive. . . . Although he continues to play in a preoccupied way with ropes, he uses them more skillfully. . . . He will sit and listen to records and rock slightly. . . . He enjoys rough housing. . . . He is afraid to climb. . . . He likes to swing, but has to be pushed, and is generally fearful and cautious in his play. He has a favorite game where he steps on your two feet, facing you, and walks along with his feet on top of yours. . . . He picks up paper, wood, and glass and chews them. . . . He seems to be happy when everything about him is predictable and controlled. If one day goes on very much as another, he seems to remain at the level of behavior he has attained. However, if there is any disruption in his life, he will go through a period of being very irritable and disturbed. He will have temper tantrums, the cause of which are sometimes indeterminable. He recovers from these temper tantrums more quickly if he is isolated from all stimuli, with perhaps just one person in the room with him. It is best not to speak or try to console him as this seems to make him even more furious. . . . He continues to bite his hand when he becomes anxious. . . . He has not had any of the usualy childhood illnesses."

At the time of Ronald's admission, the following observations were made by the Administrator of Seaview:

> "Ronald came in with his parents and followed them into the living room. He did not respond verbally to my greeting, but once in the living room started running around looking at the objects on my desk; however, he did not touch anything. When I held my hands out to him he immediately seized them, smiled broadly, uttering a little happy shriek and indicated that he wanted me to dance with him. We twirled together and then rocked in rhythm. He followed my motions and listened intently to my saying to him in a sing-song fashion, 'You like to dance. You are a graceful boy.'
>
> "Ronald is of stocky build, almost obese, with a broad face, rather pleasant and alert expression, who seems to have some disturbance of gait. He made no use of speech to communicate with me, did not respond to my saying, 'Good-bye' except by frowning. He seems to love physical contact, responding delightedly to my hugging and kissing him by almost melting in my arms. . . ."

Residency at Seaview

The following outline of Ronald's behavior in the milieu of Seaview was compiled from the direct observations of the research staff and an examination of the school records covering a period of three years and seven months of his residency. (6:1 - 9:8)

Activities of Daily Living

Eating.--Ronald continued to have erratic eating patterns. There were few times when he ate heartily. On some occasions he would not eat at all or reject certain foods. Most of his eating was done with his fingers, although there was some supplemental use of a spoon. His inefficiency in feeding himself led to extensive spilling and dropping of food. While seated at the table, he was frequently observed energetically shaking his head from side to side, while agitating his hands in the air or banging utensils on the table. There was an extensive pattern of mouthing, chewing, and sucking accompanied by indiscriminate ingestion of nonfood material.

Sleeping.--Throughout this period Ronald manifest erratic sleep patterns and extreme fatigue. His irregular, fitful sleep varied from four to thirteen hours a night. The most poignant example of his fatigue was seen when he would fall asleep at the breakfast table. There were times when he required either morning or afternoon naps. When going to sleep, he invariably pulled the covers over his head. There were weekly occurrences of nocturnal enuresis.

Toileting.--Ronald toileted independently when facilities were accessible to him and when he was wearing trousers with elasticized tops. When it was necessary for him to communicate his need for any type of assistance, he seldom was successful and would urinate or defecate in his pants.

Dressing.--Ronald continued to depend upon others in dressing activities. He showed no interest in dressing himself, and barely lifted his foot when pants were presented to him. He was able to put his own coat on with assistance; however, without guidance he was apt to put it on upside down or back to front. He experienced marked difficulty in managing zippers or other fasteners. He was unable to tie his shoe laces.

Motor Behavior

A hyperkinetic behavior pattern dominated his waking hours. His shuffling gait was especially awkward because of a marked pronation. He was invariably seen waving and flapping his arms and hands as he paced or aimlessly rushed about. In conjunction with his hand flapping, he was often observed gently agitating his fingers, small pieces of string, or paper against his lips. Periodically, he would interrupt his forward motion and shift his weight from foot to foot, vigorously shaking his entire body in a "dance-like" giggling movement which resembled the movement of a marionette when all the strings are simultaneously being vigorously jerked.

He slowly and awkwardly ascended and descended stairs with alternating feet. On the stairway he was extremely fearful as he would grope or reach out desperately for support.

He never spontaneously used play materials or the playground equipment in any meaningful or appropriate way. Occasionally, he was observed in the yard sitting on the swing, moving himself forward and back with his feet dragging on the ground, but not actually swinging.

Breath holding, panting, and forced exhalations of air were components of his all-pervasive dysrhythmic breathing pattern which developed during his years of residency at Seaview.

Linguistic Functioning

Tape recorded samples of his vocalizations were made throughout his milieu at Seaview. It was reported that during his early years of residency he had produced distinctly articulated jargon; some short echolalic responses to adult verbalizations; humming; and indistinct singing of fragments of songs in which the melodies were sometimes identifiable. However, his limited vocal productions had degenerated to the point where words were no longer heard, and only humming, babbling, and occasional whining and crying remained. A variety of fricative, sibilant, and plosive sounds were produced in association with his pattern of forced exhalations and the accidental manipulation of his oral mechanism. A prolonged "sh" and a whistling sound were repetitiously produced during inhalations and exhalations. Ronald's vocal sounds did not approximate any identifiable words.

His only direct communicative effort was to pull adults by the hand. These manipulations were so vague that his specific needs usually remained obscure.

Asocial Behavior

Ronald's hyperkinesis, severe impairment in social learning, and inability to communicate thwarted the possibility for normal social intercourse and gave him the appearance of being remote and inaccessible. Because of his passivity and pliability, he presented fewer management problems than many of the other children who were studied.

Response to Frustration

His persistent pattern of biting the back of his hand while emitting a pained whine seemed to be related to frustration; yet, the exact nature of the precipitating circumstances was usually obscure. His habitual biting had produced a large callus at the knuckle of his forefinger.

Ronald's predominant response to frustration was avoidance or abandonment of his goal. On the rare occasions when he became especially distressed, his hyperkinesis became intensified. With mounting anger he would stamp his feet and knock or throw objects to the floor. During these episodes his eyes would fill with tears and he would emit distressful sounds which were remarkably like the sharp cries of a wounded animal. Attempts to comfort him physically were vigorously rejected.

Response to New Situations

Ronald readily became frustrated, exhibiting intensified hyperkinesis, when any aspect of his routine was changed.

Response to Children

There was a complete absence of any socially meaningful play with other children. An extremely apprehensive response was manifest whenever other children were the least bit aggressive or noisy. Minimal aggression towards other children was seen; however, there were occasions when Ronald might push or shove smaller children who were annoying him or interfering with his freedom of movement.

Response to Adults

Ronald was passive and pliable to the physical manipulations of adults.

In a highly inconsistent but, nevertheless, spontaneous way he sought affectionate contact with the significant adults in his environment. It was of particular interest to note that he spontaneously initiated immediate contact with adult male visitors.

Health and Physical Status

Ronald repeatedly experienced many prolonged upper respiratory infections. He also had frequent gastrointestinal disturbances.

On one occasion he was treated for drug poisoning when he accidentally ingested 100 mg. of Phenobarbital and 600 mg. of Dilantin.

Immediately prior to the period of experimental therapy, his height and weight were recorded as forty-nine inches and fifty-six pounds. (9:2)

Following three years and five months of residency, and during the fifth month of experimental therapy, Ronald was taken to a local pediatrician for a comprehensive physical examination.

Pediatric Examination

> "This nine and a half year old male child was brought to my office for physical evaluation. There has been apparent weight loss, diminution of appetite, and noticeable blueness around the lips. There was said to be frequent upper respiratory infection. It is noted that he supposedly cannot tolerate antibiotics by mouth.
>
> "His height and weight were not recorded. His eyes, ears, nose and throat were not remarkable. His teeth appeared to be in a good state of preservation. His heart sounds were of normal rate and rhythm. No murmurs were heard. Blood pressure determination was not attempted. His lungs were clear. It was of interest to note that throughout the examination, and during the entire period that he was in the office, he would hold his breath for periods of 15 to 45 seconds, with a noticeable beginning cyanosis of the nailbeds and lips in the longer periods of breath holding. His abdomen was soft, and no masses were palpable. His skin was normal. No peripheral adenopathy and gait was spastic.
>
> "Vollmer tuberculin patch test was negative. Urine was negative for albumin, sugar, and phenoaliñine. Specific gravity was 1022; urinary sediment was negative. Hemaglobin was 96%; W.B.C. 7,900 - 64/36.
>
> "It is obvious that breath holding, whatever its cause may be, is the process by which cyanosis is produced. No pulmonary or cardiac pathology exists. The anorexia might be lessened with the use of Thyamin Chloride in amounts of 5 mg. twice daily, or use of ViSorbin (SKF) 1 teaspoon three times daily after meals. This child should be seen again in six months."

Experimental Therapy

Ronald was a good looking, stocky, nine year old who appeared somewhat shorter than children of his age group. His upper body seemed disproportionately large because of his broad shoulders, short neck, and barrel chest. His appearance was enhanced by his large blue eyes with exceptionally long lashes, and his well-formed teeth.

The sixty-three sessions of relationship therapy were characterized by passivity, persistent dysrhythmic breathing, breath holding, hyperkinesis, stereotypic behavior patterns, and the complete absence of verbal communication. He was seen by the male clinician.

During the first three months of therapy Ronald received 5 mg. daily of the tranquilizer Librium. For the remaining months of therapy this medication was continued with the addition of 1/4 gr. daily of the sedative Glutethimide (Doriden).

First Month (1st through 11th session)

Most of Ronald's stereotypic behavior patterns which were to occur over the course of therapy were observed during the initial session. Most predominant was his seemingly aimless rushing back and forth, while flapping his arms, shaking his hands, and tossing his head from side to side. Within a few moments after entering the therapy room he established a distinct pattern of movement. He would pace or run in a semicircular path between the two windows of the room, tracing and retracing his steps. Sporadically he would cease his activity and, while using one hand to push the other into his mouth, he would bite or gnaw the back of his hand at the large knuckle of his forefinger. This was accompanied by grimacing, distressful vocalizations, and the stiffening of his entire body.

He appeared extremely apprehensive in his marked avoidance of the play materials and the clinician. He did not look directly at any of the toys, but viewed them with peripheral vision. After passing by the nursing bottle several times without looking directly at it, he casually picked it up and began to chew on the nipple. As he paced to and fro he mouthed, sucked, licked, and chewed the nipple. Interspersed with this oral pattern, he sought further kinesthetic stimulation as he gently tapped and rubbed both the nipple and the nursing bottle against his lips. Also, he would hold the bottle in one hand while delicately fingering and tapping it with the other. The manner in which he handled the bottle was representative of his approach to most media.

When his initial apprehension diminished, he had rapid contact with each of the play materials as he shuffled back and forth across the room. With only a furtive glance at an object he would quickly grab it, explore it orally and tactilly, and with the same casualness with which he had originally picked it up, he would discard it. He maintained this hyperkinetic behavior pattern throughout the session; however, he persistently returned to either the nursing bottle or the pacifier.

Towards the end of the session Ronald initiated his first direct contact with the clinician when he thrust the nursing bottle at the clinician who was seated on the floor. Because of the vagueness of Ronald's gesture, the clinician did not recognize that he wanted the top unscrewed in order to get a drink of water. The bottle was simply accepted, only to be retrieved again by Ronald who then unscrewed the top independently and began to drink the water from the bottle. Once it became apparent that he wanted a drink of water, the clinician refilled the bottle in the adjoining bathroom, thus demonstrating the accessibility of this room to Ronald.

After satiating his thirst, Ronald resumed his exploration of the play materials. He stood at the table and in his predominant hand-to-mouth pattern began to eat the crayons. In an attempt to limit his ingestion of the crayons the clinician offered him paper, hoping that he might choose to use the crayons meaningfully. As a result of this, a unique interaction occurred. Ronald pushed into the clinician's lap and began to guide the clinician's hand in what was seemingly the expression of his wish to have the clinician use the crayons. The clinician complied with his gross manipulation and began to draw a few simple figures. Ronald did not directly attend to these productions but continued to eat the crayons, making it necessary for the clinician to remove half-masticated chunks from his mouth. When the clinician ceased drawing, Ronald repeatedly manipulated his hand. Eventually, Ronald made a few scribbles on the paper. It was as if he were attempting to relate by recreating a previously acquired pattern of behavior associated with crayoning. This episode was representative of Ronald's greatest effort at specific communication.

An unusual breathing pattern was predominant throughout this and all the ensuing sessions. He incessantly hyper-ventilated and forcefully exhaled his breath, accidentally producing a variety of labial and fricative-continuant sounds. Intermittently, he would manifest prolonged periods of breath holding with sudden, forceful, and explosive exhalations of air.

As the content of Ronald's play lacked affect and was devoid of themes during the first month, the clinician was limited to reflections and descriptions of his behavior. The paucity of his vocalizations severely limited any opportunity to share imitative vocal play. While eye contact was rare, there were a few sporadic exchanges of smiles.

Second Month (12th through 22nd session)

During this month Ronald manifest paradoxical behavior patterns. He continued to present prolonged and intense hyperkinetic behavior, but this became interspersed with periods of lethargy when he appeared listless and fatigued. On several occasions he was so overwhelmed with fatigue that he fell asleep in the clinician's arms and was put to bed. It was noted that his dysrhythmic breathing patterns and breath holding persisted even during periods when he was inactive. These extremes of hyperactivity versus lethargy persisted during the subsequent months of therapy.

Whenever the clinician went to get Ronald from his play group or the yard, he readily accepted the clinician's hand and complacently followed wherever led. He did not appear aware of where he was going until he was within a few feet of the therapy room. If his hand were not held, he would aimlessly stagger off in any direction.

As Ronald became more familiar with the therapy room, his constricted pattern of movement expanded to include the complete utilization of the available space. He spent large parts of every session repetitiously going back and forth to the bathroom, each time taking only small sips of water. This pattern of behavior became firmly established and continued throughout the ensuing months. He used his right hand to turn the faucet on, while holding the glass with his left. Then, grasping the glass with both hands, he would sip the water. He drank both hot and cold water with no observable reaction, failing to respond to the clinician's suggestions, made verbally and with gestures, to drink only the cold water. In the same way that he held his breath, he would hold the water in his mouth for twelve to fifteen seconds before swallowing it. When he was finished drinking he invariably dropped the glass into the sink. Frequently he would return to the therapy room sucking on some wet toy, thoroughly soaked rag, or sponge.

As Ronald had complete access to the toilet facilities, he spontaneously and independently used them whenever the need arose. He did not undo his trousers, but simply forced them down over his hips. He always stood to urinate. There was a significant reduction in his hyperactivity and dysrhythmic breathing when he was seated on the toilet. Unless the clinician offered him toilet paper, he would not wipe his rectum. The moment he hopped off the toilet he would resume his pacing and rushing about, never pausing to flush the toilet.

Whereas no vocalizations had been heard during the early weeks of therapy, a few vocalizations were noted during the second month. Brief, repetitive phrases of jargon were produced with a variety of inflectional patterns. The distinct vocalization of "gootee, gootee, gootee" was heard during periods of joy.

During the following weeks other patterns of stereotypic play became apparent. He sought maximum kinesthetic stimulation through simultaneously handling and mouthing more than one play object at a time. He would hold the end of a balloon in his mouth and by shaking his head back and forth, bounce the balloon from cheek to cheek. This was accompanied by his delicate tapping and fingering of anything which happened to be in his hand or within close proximity including the furniture and fixtures in the room, as well as the clinician.

It was discovered that any sudden movement on the part of the clinician elicited defensive posturing in Ronald. Accordingly, the clinician guarded against evoking this fear response by moving slowly.

The research staff repeatedly observed that Ronald had a strabismus in his left eye, and a recurring cyanotic condition. It was not until the fifth month of therapy that Ronald was finally seen by the local pediatrician who found no evidence of any pulmonary or cardiac pathology and suggested that the cyanosis was the product of his breath holding.

Third Month (23rd through 33rd session)

During this phase of therapy Ronald came to readily accept the clinician's overtures for direct contact. Although all the clinician's efforts utilizing both verbal and gesture communication had previously met with no success, Ronald eventually responded to the firmly stated verbalization, "Come!" when it was accompanied by gesture. This was successfully conditioned only after repeated presentations which were well separated from any other verbalization. Exhibiting a significantly delayed response, Ronald would move towards the clinician and very cautiously climb into his lap to be cuddled.

A significant increase in the quantity of Ronald's vocal output occurred while on the way to therapy and during the first few minutes of each session. His jargon included a greater variety of speech sounds and his inflectional patterns began to vaguely resemble indistinct melodies.

Because of Ronald's extensive oral activity and the pervasive huffing and puffing quality of his breathing, a variety of blowing activities were introduced. Bubble pipes, whistles, balloons, and matches were offered giving him the opportunity to redirect his need to huff and puff to purposeful blowing. He was unable to adapt his forced exhalations of air in order to utilize any of the materials meaningfully. While he readily accepted the materials as they were offered by the clinician, his attention span was so limited that the repeated attempts to demonstrate the required techniques through visual models, pantomime, and gesture failed to evoke appropriate responses. He would dance about happily mouthing, chewing, and sucking the media.

As the relationship grew, the clinician came to recognize Ronald's moods through the discrete differences in the quantity and quality of his affect. For the most part, he had a pleasant but somewhat bland facial expression. There were times, however, when he exhibited exuberance and joy. His happy smile could erupt with the same spontaneity whether he was looking at the clinician or playing with BoBo, the puncho toy. Often, his play with BoBo was full of affect as he dragged it about the room with him as one would a favorite doll, sporadically tapping, patting, hugging, squeezing, and rolling on it.

Ronald's breath holding pattern persisted during the entire course of therapy. He did not exhibit this behavior in relation to any identifiable stimulus as it occurred with the same frequency in both periods of delight and distress.

Periodically, Ronald arrived for therapy in an agitated, angry state. Although it was not always possible to identify the precipitating circumstances, it became clear that fatigue and the need for sleep contributed to these periods of distress. He would stamp his feet as he paced about the room and emit short, staccato vocalizations best described as a bark. Although in the early months of therapy he rejected the clinician's efforts to soothe him, he gradually became more acceptant of the clinician as a source of comfort by crawling into his lap and cuddling.

In the growing relationship Ronald began to assert himself within the limits of his nonverbal modes of communication. On one occasion while the clinician was cranking a toy music box, Ronald clearly indicated his wish for the clinician to stop by taking the music box from the table and setting it on the floor. On another occasion, Ronald indicated that he wanted to go for a car ride rather than go up the stairs to the therapy room. He heaved, hauled, pulled, and shoved the clinician through the front gate, assertively leading him by the hand to the cars parked on the street, and proceeded to get into the first car he came to.

Fourth Month (34th through 43rd session)

Ronald indicated a greater awareness of and interest in the clinician as exemplified by his visual attention to the clinician's movements about the room and the manner in which he visually and tactilly explored the clinician's face.

As Ronald's vocal output steadily increased in quantity, the clinician availed himself of every opportunity to stimulate further vocalizations through imitative vocal play. Seated in the clinician's lap, perhaps fingering the clinician's face or mouth, Ronald did not respond to any of the clinician's modifications of his vocalizations despite the fact that visual, auditory, and kinesthetic clues were provided by such close proximity. Through this and other experiences it became increasingly apparent that Ronald was limited in his perceptual functioning.

Whenever Ronald handled the play materials, the clinician took the opportunity to unobtrusively present the appropriate use of the particular media. Even though he sat in the clinician's lap and desperately attempted to imitate the clinician's activities with the play media, his responses were limited by his inabiltiy to attend. With each presentation he made an effort to copy the model but gave incorrect and distorted responses. These substitute responses were particularly representative of his strivings to participate. Perceptual dysfunction was variously demonstrated by his inability to copy the clinician's model of a three-block tower, sort geometric forms, or reproduce simple linear figures with crayons.

Numerous opportunities to observe Ronald's auditory functioning occurred throughout the course of therapy. On the few occasions when he turned the crank of the musical jack-in-the-box, no reaction was observed as the jack flew out of the box. Loud, sudden noises such as the breaking of a balloon or the crashing of the music box on the floor directly behind him did not evoke a startle response even when he was holding his breath. Ronald showed no recognition or understanding of the clinician's verbalizations despite their concreteness and simplified construction.

As some body contact occurred in most sessions, the clinician observed Ronald's great apprehension for antigravity play. During piggy-back rides or somersaults he would stiffen his body and become rigit. Whenever Ronald's feet were not in contact with the floor he would cling tenaciously to the clinician.

Fifth and Sixth Months (44th through 63rd session)

With the onset of winter Ronald developed a chronic upper respiratory infection presenting a persistent cough and runny nose. The marked cyanosis previously reported during therapy continued to be present along with periods of extreme fatigue. The clinician's continued observation of his breath holding revealed certain distinctly associated patterns. Ronald would cease all activity, stand perfectly still, quietly inhale while arching his back and thrusting his chest forward, and maintain this posture for twelve to forty-five seconds until he forcefully released his breath. It was felt that the prevalence of this behavior might account for the development of his barrel chest.

New patterns of motility developed during this period. Although the same "dance-like" quality persisted, Ronald began to move about the room sideways, sporadically twirling himself around, making two or three complete circles. While lying on his stomach on the floor and emitting pleasurable vocalizations, he would squirm about rapidly moving all of his extremities and using reciprocal movements which were similar to those seen when he danced. At times he appeared as if he were a floundering swimmer thrashing about in the water.

Trips to the bathroom continued throughout this period. When a drinking glass was not available, Ronald displayed a primitive intelligence by scooping water from the faucet in his cupped hands.

During this phase of therapy Ronald's production of jargon became extensive. Most of his vocal utterances continued to have a song-like quality and seemed to be associated with gaiety and exuberance. Although his jargon had no communicative value, it was the clinician's impression, because of the length of his vocalizations and his associated behavior, that Ronald thought he was actually singing songs.

Ronald's behavior continued to suggest perceptual dysfunctions. Because of the established relationship which provided the clinician with a sensitivity of the child's capacities and frustration tolerance, it was at this time possible to interject some simple perceptual and psychomotor tasks into the play situation without unduly threatening the relationship. By presenting a lighted match behind the one-way vision mirror, an observer recorded Ronald's capacity to attend to and follow the moving light. Whereas some of the children responded to this particular stimulus by attempting to locate the light source within the therapy room, Ronald showed no awareness of the usual function of mirrors. It was noted by the observer that he briefly attended to the light when it was moved on a vertical plane. When the light was moved to his right on a horizontal plane he briefly followed its movement; however, he repeatedly ceased to follow it whenever it was moved to his left. He consistently failed to attend when the light was introduced peripherally.

With the advent of cold weather additional perceptual problems were observed. The clinician attempted to encourage Ronald to manage his own outer clothing by handing them to him. On several occasions when the clinician handed Ronald his hat, he shoved his arm into the hat as if it were the sleeve of his coat. Similarly, appearing completely unaware of the inappropriateness of his actions, Ronald often tried to put his coat on upside down or back to front.

When presented with the Playskool shoe lace trainer, Ronald would feign the movements of putting the lace through the holes without looking directly at the task.

Ronald, like the other children in the study, was particularly fond of "sweets." Using candy to motivate him, an effort was made to explore possible ways of developing techniques for evaluating various factors of his perceptual functioning through the presentation of four plastic cups (red, blue, yellow, and white). The initial presentation was limited to two colors. He was allowed to see a piece of candy being placed under one of the two inverted cups. It was only after repeated gesticulations that he would cautiously take the candy from beneath the cup. He exhibited extreme dependency on the clinician's gestures for guidance and approval. Because of his significantly delayed responses and his apprehension about picking up the candy even when he was successful in locating it, it was not possible to adequately condition him to this task within the available time; therefore, only limited results were obtained. When Ronald was prevented from seeing the color of the cup under which the candy was placed and had to depend solely on the clinician's verbal directions, he repeatedly experienced failure in locating the candy. When the presentations were modified by increasing the number of cups or by moving the cups, Ronald became readily frustrated and abandoned the task.

Therapy was terminated gradually by diminishing the frequency of the sessions.

Case Summary

Medical History

Although at birth Ronald was described as "a normal, full term, male infant delivered without incident," it should be noted that he was a forcep delivery and that one loop of the cord was about his neck. He had a stormy infancy marked by gastrointestinal disturbances. His lack of speech, retarded motor development, and aberrant behavior received highly divergent diagnoses.

A diagnosis of cerebral palsy was based on probable anoxia at the time of birth. Positive neurological signs, retardation in speech and motor development, and his gait disturbance suggested pyramidal tract damage. The history of neurosis in Ronald's parents, his asocial behavior, and his bizarre and stereotypic behavior patterns led to a diagnosis of infantile autism. The psychiatric clinic disregarded the diagnosis of cerebral palsy; accordingly, no further neurological assessment or laboratory studies were conducted.

Previous Therapy

As the diagnosis of infantile autism prevailed, psychiatric treatment was provided for Ronald and his parents for two and a half years. (3:6 - 6:0)

The psychiatrist felt that Ronald had improved in his relationship with people and that his mother had made a better adjustment to his problems. The psychiatrist "ruled out" any neurological basis for Ronald's disturbance of gait, and felt that his giat had improved except when he was distressed. His limited use of his hands was viewed as the consequence of strong premature prohibitions against masturbation. It was noted that during therapy Ronald had learned several words; however, his speech production was "quite unpredictable." Therapy was terminated with the recommendation for institutionalization.

Residency at Seaview

When Ronald was six years and one month old, he was admitted to Seaview for residential care.

Three years and seven months of his residency were studied and revealed that only slight modifications in his behavioral status occurred. His limited echolalic speech productions disappeared with only humming, babbling, whining, and crying remaining.

Ronald's most prominent behavioral pattern was his hyperkinesis. He paced and rushed about, while flapping his arms and hands and tossing his head from side to side. Breath holding and dysrhythmic breathing patterns developed during this period. His prolonged breath holding and erratic sleep patterns resulted in periods of extreme fatigue. Uneven eating habits persisted. While extensively dependent upon adults for his care, he was not a significant management problem because of his passivity.

Experimental Therapy

Observations and impressions gained during the sixty-three sessions of experimental therapy were as follows:

Nature of the Relationship

Early in the course of therapy it became apparent that Ronald had a specific language deficit which prevented his comprehension of the clinician's verbal reflections. His hyperkinesis, combined with the sterility of his play and his total absence of speech, limited the possibilities for both physical and verbal interactions; therefore, the growth of the relationship became totally dependent upon nonverbal modes of communication.

After an initial period of apprehensiveness and avoidance, Ronald came to accept direct physical contact and eventually sought and shared warm affectionate interaction. A positive force was experienced in a growing relationship as the clinician's energies were directed towards providing Ronald with a "safe" environment. An atmosphere of comfort was created by reducing all movement and by avoiding quick or sudden movements; by speaking in a quiet voice; by lessening the demands for language comprehension and performance; and by setting a modicum of limits.

Perceptual Processes

Ronald's responses to external stimuli which were observed in both structured and unstructured situations were as follows:

Olfactory.--Ronald did not manifest aberrant use of his olfactory processes.

Gustatory.--Although minimum selectivity in his choice of foods was noted, an extensive pattern of mouthing, sucking, chewing, and ingesting nonfood items occurred throughout, suggesting reduced discrimination in this area.

Tactile-kinesthetic.--Ronald was intensively dependent on this mode of perception. He tapped, gently fingered, and extensively handled every object with which he had contact. He sought constant kinesthetic stimulation by delicately tapping objects against his lips. Repeated observations of Ronald's indiscriminate drinking of very hot water was suggestive of the lack of proprioception in his oral mechanism.

Response to Pain.--Because of Ronald's extreme cautiousness it was not remarkable that during the course of study he was never involved in accidents. Accordingly, there was no occasion to observe his response to painful stimuli.

Visual.--It was not possible to assess the degree of impairment of his visual functioning caused by the strabismus in his left eye. Attempts to measure his visual discrimination and memory for color and form were inconclusive. His ability to follow a moving light was suspect.

Auditory.--Ronald's acuity was highly questionable as he failed to respond to auditory stimuli of maximum intensity. A startle response was never exhibited.

Motor Behavior

Ronald showed retardation in gross motor skills. He had a shuffling gait with a marked pronation. Although he could ascend and descend stairs with alternating feet, he was fearful, slow,and awkward. The absence of social learning, combined with his basic motor deficit, limited his performance to infantile motor behavior. Some part of his body was constantly absorbed in a game of movement. He demonstrated minimal purposeful use of his hands in his ability to turn a faucet on and off, and to hold a glass or spoon; but failed in other areas when a modicum of eye hand coordination was required.

Vestibular Functioning.--Ronald strongly rejected anti-gravity play involved in climbing, jumping, swinging, or piggy-back rides. While specific vestibular dysfunction was not clearly established, it was noted that on the few occasions when adults tried to involve him in such activities, he responded by stiffening his entire body in terror.

Linguistic Functioning

Receptive.--There was no evidence that Ronald understood any verbal language process. Limited responses were observed when communications were restricted to gestures alone. It was possible to condition him to one primitive communication, "Come." This was accomplished by combining the gesture with intensification of the verbalization by increasing the volume and lowering the pitch.

Expressive.--An examination of his peripheral oral mechanism revealed no observable structural abnormalities. During the course of contact, Ronald was observed breathing exclusively through his mouth. Whenever his mouth was closed he never emitted air through his nasal passages, he simply held his breath. It was not possible for the clinician to examine the functioning of his velum or the adequacy of his velar-pharyngeal closure. While Ronald exhibited extensive patterns of nonvolitional huffing, puffing, and blowing it was of significance to note that in his attempts to blow harmonicas, balloons, or bubble pipes, an oral apraxia was demonstrated.

A modicum of changes in Ronald's vocal output occurred over the course of therapy. The vocalizations produced during the initial phase of therapy were largely nonvolitional sounds formed by the accidental manipulation of his oral mechanism. Extensive periods of volitional babbling and the production of jargon appeared in the later phase of therapy. Greater variations of pitch and volume were also heard. It was felt that these quantitative and qualitative changes in his vocal output were a function of his mood.

On rare occasions he attempted to communicate through nonspecific manipulation of the adults in his environment which represented his highest level of communicative achievement.

Time and Spatial Orientation

With the exception of his distress when the sequence of his routine was changed, there was no evidence that he was aware of temporal relationships.

A singular episode indicated some degree of geographic orientation as he led the clinician out of the building and to the parked cars when he wanted to be taken for a car ride.

Ronald required constant reassurance as to his position in space as he touched and felt the walls or door frames of most rooms. This behavior was particularly prevalent when he went up or down the stairs.

Reaction Time

Ronald's response to all sensory stimuli was severely delayed or absent. His depressed responses to unusual disturbances in the environment were incongruous when compared with his general level of apprehensiveness.

Learning

Attention.--Behaviorally, Ronald was so fractionated that his ability to attend to external stimuli was almost nonexistent. All his energies were expended in stereotypic behavior patterns which were viewed as perseverative phenomena, severely limiting his opportunities for learning.

Imitation.--In task-oriented situations he did not imitate or integrate any visual, auditory or kinesthetic models, but made substitute responses in an effort to participate.

Memory.--Ronald had acquired a number of primitive associations through conditioning. This was seen by his recognition of hazardous or physically threatening situations. It was found that it was possible to condition him but extensive reinforcement was necessary.

Problem Solving.--Ronald's response to frustration was characteristically withdrawal or avoidance. Because of the rapidity with which he abandoned his goals, it was particularly difficult to discern the nature of his goals and his approach to fulfillment.

On one occasion a primitive adaptation to problem solving was seen as Ronald drank from his cupped hands when a glass was not available.

Case History of Joe

Date of Birth: 3/15/51

Family History

When Joe was three years old his mother was killed by his father, who subsequently was convicted of manslaughter. The family history was obscure as there were no social agencies involved with the parents prior to or after the mother's death.

Joe's mother had had one child by a previous marriage. Her family had not approved of her second marriage to Joe's father because they felt that he was antisocial, cruel, and mentally ill. It was not until after her marriage to Joe's father that her family's suspicions were confirmed when she learned that he had been hospitalized "many times" for mental illness.

When Joe was born both of his parents were thirty-five years old. His half brother was fourteen years old and his sister, a full sibling, was eight and a half years old. This sister required institutionalization as she was reportedly "schizophrenic."

Joe's aunt described her sister as a very nervous person who isolated herself socially and devoted her entire attention to her children, especially Joe. His uncle recalled Joe as a "pathetic child" who seemed "neglected."

Birth Record

A review of the hospital record described Joe's mother as:

> ". . . An extremely neurotic thirty-four year old, who was delivered of her two previous children by cesarean section.

> . . . There is also a history of profuse and prolonged menstruation of many years duration which in itself has frequently been disabling. The patient also has tachycardia of many years duration--diagnosed as sinus tachycardia. . . .
>
> "In view of this history cesarean section and hysterectomy is regarded as the treatment of choice.
>
> "Apart from neurotic complaints, constipation, and tachycardia, the prenatal course was satisfactory."

According to the obstetrical notes, Joe was an apparently normal male, delivered by low classical cesarean section without difficulty. His position was left occipt anterior; the anesthetic administered was Pentathol and Nitrous Oxide. A subtotal hysterectomy was performed.

The infant's birth weight was seven pounds, ten ounces, and the hospital course was uneventful.

Infancy (First-Second Years)

As a consequence of the family's disintegration following the mother's death, the sources of information concerning Joe's early developmental history were limitedet his pediatrician and maternal grandmother.

A review of the pediatrician's notes revealed that Joe was bottle fed and experienced a steady weight gain. He sat with some support at nine months. When Joe was one year and two months old, the pediatrician saw him because his mother complained that he was eating less and was less active. He had begun to walk with support; however, pronation was noted.

Two months later he returned to the pediatrician who reported:

> "There has recently been less than the normal amount of sleep--he walks with little support--given Phenobarbital.
>
> "Impression.--Defective hygiene."

At two years and two months, Joe's mother was concerned because he looked pale. She reported that he walked well and was saying a few words. The following month, according to the pediatrician's notes, Joe had a questionable bout of german measles or roseola.

When Joe was 2:7 he became irritable, accompanied by constipation and vomiting. The pediatric impression was "a questionable intestinal infection."

At 2:10 Joe's mother reported that he "is very tired, and says only two or three words." The pediatric impression at that time was "retarded--question of how much is due to the mother's tenseness and anxiety."

The following month, the pediatrician noted:

> "Still doesn't talk and is rather apathetic--poor eater, refusing solids--won't chew. Mother concerned about him and very apprehensive about infection. She apparently doesn't show affection or work with him."

Joe's grandmother recalled:

> "As far as I know, he never tried to speak or make any sounds though I remember his mother saying that he did try to speak. No one else ever heard him make any attempt to speak. . . . The first realization of his condition came when at about two years old he would not turn his head or look at you when spoken to. Also, he would not play with toys."

Third and Fourth Years

The family members were separated upon the death of Joe's mother and the incarceration of his father. His half brother went to live with the maternal grandparents; his sister was institutionalized; and Joe went to live with his maternal aunt where he remained from the age of 3:1 to 5:6.

During the period that Joe lived with his aunt, she recalled that he was not toilet trained, he walked and climbed stairs well, and he was "quite a feeding problem." He would eat only strained foods, spitting out any solid material--"even cookies." He did not use any words; however, he pointed to what he wanted--"he led the adult to the door if he wanted to go out." He became extremely upset whenever she attempted to make him ask for things. She had the impression that "at times he understood what was said to him; at other times he would just look off into space. . . . he was usually in his own little world--playing with his hands or just looking at you with a faraway look."

When Joe was four years old, his maternal aunt sought help from the state mental health clinic where he was seen diagnostically by the clinic's speech and hearing therapist and their psychologist, while his aunt and uncle were interviewed by a social worker.

Psychological Summary

> "Joe was seen five times for clinical evaluation. During these sessions the only audible word he spoke was 'no' and this was produced only on one occasion. Other than that there was no speech. For the most part he appeared to be out of contact; gazing into space or staring at a wall. He did not respond to people talking to him except for an occasional recognition of his name. He had a need for bodily contact, and at times could be quieted and comforted only by being picked up in someone's arms and held closely for the greater part of the interview hour. One felt he was a fearful child in the way he clung to the examiner's skirt, hand, and even finger; and in the way he screamed when in an elevator. He showed no discernible interest in toys, would not pick them up or play with them, nor at times would he touch them. He walked aimlessly around the clinic rooms and on occasion engaged in a kind of circular activity, walking around and around very close to the examiner. The only time one saw any sparkle or enthusiasm in this child was when one particular game was played with him; i.e., the examiner standing facing him with arms apart while he ran into them to be swooped up and held. Once he engaged in any activity he continued on

and on repetitively until stopped.

"Impression.--The following symptoms and behaviors seem to indicate that Joe was an emotionally disturbed child, possibly an autistic child: 1) mutism; 2) inability to respond in any fashion to others except for a fleeting moment; 3) clinging to others, but not actually relating; 4) circular rotary activity; 5) rolling himself up into a ball while on a chiar with his knees drawn up to his chin, seemingly out of contact, but flinging his right hand around with jerking movements; 6) standing very close to a wall, not quite touching it, looking at it and yet not recognizing it. This was of several minutes duration; 8) chuckling and occasionally laughing, not related as far as could be determined to any external stimulus."

Speech and Hearing Evaluation

"First observation of the youngster resulted in avoidance of his eye contact. He seemed to willingly avoid direct eye contact with others in the room. In response to loud noises he winced. When these loud noises were produced toward one side or the other, he shrugged the appropriate shoulder and brought his head down toward that side. When sharp noises were made he responded with eye blink. He exhibited bizarre types of behavior such as wall slapping, circular walking, wrist turning of the right hand, and chewing movements (which might lead to teeth grinding). He ignored continuous finger tapping on his shoulder and scratching of his arm. It was felt that he does little, if any, inner thinking (inner speech). He ignored the furniture which was haphazardly arranged on the table. He responded with grimaces to all noisemakers, and then having satisfied his initial 'curiosity' would no longer respond to them.

"Given a cowbell in his right hand, he usually put it to his mouth (as he would with all objects). He no longer made any use of the bell. If he were a deaf child or had a hearing impairment of any degree, he would have felt the vibrations made by the clapper and would have continued moving the bell. Only at one point in the interview did he voluntarily respond to playing with a ball. He kicked this a few times and then ignored it. At one point it would seem that his exuberance overcame his isolation and he began to phonate. This is not thought to be a case of brain injury (aphasia) since it seems that certain nonverbal and verbal cues are integrated into the behavior of the boy. He responded to the command, 'Take,' reaching for an object from the hands of the examiner. However, words having the same connotations were not responded to. For example, 'Here' did not mean the same as 'Take.' It is very doubtful that this is a case of organic deafness since the boy's laughter has tone and quality. A deaf child's laughter lacks these qualities if he laughs at all.

"Summary.--1) The behavior of this lad as cited above would lead one to believe that the emotional problem is quite severe.

> 2) Reactions to gross sound would lead one to believe that there is some hearing remaining that has not been completely blocked because of emotional disturbance. 3) It was very evident in the course of observation that security, affection, and increased and continued environmental stimulation are needed and have heretofore been neglected."

Based on the above impressions, the mental health clinic made the following diagnostic conclusions:

> "Clinic study revealed Joe to be an autistic child who is unable to form satisfactory personal relationships. Although he was operating in approximately a level of eighteen months of age, Joe was not considered to be mentally retarded. It was the consensus of the staff that Joe was emotionally ill, probably schizophrenic; he needed more love and affectionate care than his aunt and uncle seemed able to give him despite their apparent good intentions. His uncle showed much more warmth and affection towards him than his wife. It seemed that his aunt's emotional conflicts concerning her dead sister impeded her attempts to care for her sister's children, especially Joe.
>
> "Final Diagnosis.--Our observations, combined with Joe's history, led to the formal diagnosis of schizophrenic reaction, childhood type, and the general feeling that he was probably autistic.
>
> "Recommendations.--It was agreed that our clinic had nothing further to offer Joe whose needs could best be met by placement in a private institution for emotionally disturbed children or in a carefully selected foster home if such could be found. Both of these possibilities were explored and discussed with his aunt. As had been expected, she was unable to accept the suggestion of possible foster home care."

Fifth Year

When Joe was five years old, his aunt and grandmother arranged for further diagnostic study to be conducted at a university child study center.

Clinical Evaluation

> "Efforts to administer a developmental examination were fruitless. In the observational situation, he demonstrated typical psychotic behavior. His contacts, both with the grandmother and with the examiner were transitory and were initiated only when he wanted one of them to do something for him (i.e., to open the door to the hallway). In this situation

> he utilized the adult primarily as a tool just as he might with an inanimate object, pulling the person to the door, putting their hand on the doorknob, and waiting. If the adult did not comply, he protested mildly and persisted in his efforts.
>
> "He used none of the play materials, but seemed to enjoy watching the top spin, but made no effort to spin it himself. He covered his ears at intervals as though to shut out some sound. He seemed to move about primarily under the influence of internal stimuli only minimally relating to any stimulus from the grandmother or the examiner.
>
> "*Impression*.--Childhood psychosis."

Electroencephalographic Report

> "*Impression*.--This EEG is within normal limits awake and asleep for this age level."

Joe remained with his aunt until he was about five years and seven months old when he was institutionalized for a year in a residential care program. As his records could not be located, the referring agency could not be ascertained. The following impressions were recalled by a staff member:

> "As I remember Joe he was very babyish in general, very withdrawn, and the most stubborn case of constipation we had ever had. It took a long time to get him to laugh and be friendly, but he did gradually come around. When he left he was repeating the vowels after me, but I don't think he had yet said a word. He'd had a hard babyhood.
>
> "We were not sure whether he was generally retarded or had a diffuse brain injury--I would not then have called him autistic."

Sixth Year

During this period of institutionalization, Joe periodically visited with his grandmother. While visiting, he was taken to his early pediatrician who made the following observations:

> "Recently brought home from school by his grandmother for fear of an infection at school. He's had a recent cold. Since coming home he has been more emotionally disturbed. Apparently misses his playmates at school. Resists physical examination. Is obviously disturbed and much retarded. No speech during

> the visit. Walks well. Doesn't undertake any purposeful activity."

Seventh Year

When Joe was about 6:7, he was withdrawn from the residential institution and placed in a foster home where he remained for about seven months. His grandmother reported that "he got along fairly well with some training." No further information was available.

When he was seven years and two months old, Joe returned to live with his grandmother. During the following six months his grandmother investigated several schools and sought advice in various quarters as she felt that he was more disturbed and had become emaciated. His pediatrician made the following observations during this period:

> "Child wanders about the room waving his hands--doesn't talk--gait seems pretty normal--unable to tell about coordination of hands--knee jerks normal. Right ear plugged with wax.
>
> "*Impression*.--Retarded and disturbed." (7:5)

> "Joe had three episodes lasting a half an hour or so in which he first snuggled a little while in his grandmother's lap and then became very agitated--waving and quivering arms and legs and grabbing grandmother's hair and throat." (7:6)

Eighth Through Tenth Years

Admission to Seaview

As a result of his grandmother's inquiries, Joe was admitted to Seaview for residential care when he was seven years and seven months old.

In Seaview's pre-admission questionnaire, his grandmother provided the following information regarding his status. He was toilet trained with the exception of nighttime wetting. He was inclined to be constipated. He had no known food allergies, but refused to drink milk unless it was flavored with chocolate. Generally he had to be encouraged to eat. He required help in dressing and was unable to tie his shoe laces. His favorite activities were sliding, swinging, running about, climbing, playing with a ball, and going for car rides. She perceived him as being hyperactive.

Residency at Seaview

The following outline of Joe's behavior in the milieu of Seaview was compiled from the direct observations of the research staff and an examination of the school records covering a period of three years and one month of his residency. (7:7 - 10:8)

Activities of Daily Living

Eating.--Joe's appetite remained particularly erratic during the entire three year period. His appetite was significantly affected by prolonged periods of retention and constipation, frequently lasting a week. The occasional ingestion of nonfood items resulted in additional gastrointestinal upsets.

Joe was able to independently take his regular seat at the table in the dining room. When other children created a disturbance at mealtime, he would cover his ears with his hands, attempt to hide beneath the table, and refuse to eat.

He had very definite food preferences and aversions. When he did not want to eat, he would emphatically push the food away, usually accompanied by a distressful vocalization. During his first two years of residency he continued to be fed although sporadic efforts were made to encourage him to feed himself. During his third year he fed himself by using his fingers to push the food onto a spoon. He was able to drink independently. Most of his meals were eaten slowly with extreme lethargy. After everyone else had left the dining room, he was often seen seated at the table with his chin cupped in his hands, laboriously masticating his food.

Sleeping.--For the first two years at Seaview, Joe presented persistent sleep disturbances. He would wake several times during the night, crying inconsolably. Frequent episodes of crying and whimpering in his sleep were reported. Some mornings he would be found in bed, asleep, with one of the other boys in his room. In order to get to sleep he covered his head with the bedclothes. Because of his disturbed sleep, he frequently required daytime naps. Although there was some improvement in his overall sleep pattern, Joe continued to wake periodically in the middle of the night and was unable to return to sleep. Nocturnal enuresis was rare.

Toileting.--As Joe was continually plagued with constipation, toileting became the focal point of his problems. When he first arrived at Seaview, he screamed and cried for prolonged periods when he needed to urinate or defecate. After sometime, fewer problems were associated with urinating; however, he continued to appear traumatized when defecating. When distressed by constipation Joe would writhe in pain, screaming and moaning. Because of the prolonged periods of bowel retention, attempts were made to precipitate bowel movements by series of enemas, cathartics, and "soap stick" suppositories.

It could not be said that Joe was toilet trained. Occasional smearing accompanied the periodic episodes when he would defecate in his pants.

Dressing.--Although Joe was able to independently put on most of his clothing with the exception of his shoes, he sometimes put them on back to front or upside down. He was unable to tie his shoelaces. He was dependent with regard to the manipulation of fasteners or buttons. He approached dressing with the same lethargy and dependency exhibited in all areas of functioning. There was no demonstrable change in his ability in this area.

Motor Behavior

Because of Joe's essential inactivity, listlessness, and overall lethargy his involvement in motor activities was limited. He exhibited considerable skill as he perseveratively bounced or juggled a ball in the air. He demonstrated a good sense of balance on the playground equipment and as he playfully walked around on his heels. When a trampolene was added to the equipment during his third year at Seaview, his skill in balancing combined with his habitual pattern of jumping found full expression. Joe was the only child of the entire group studied who independently learned a few simple gymnastic maneuvers.

Although he was able to ascend and descend stairs with alternating feet, he was often observed pausing on each step as he slowly ambled along.

While he displayed some skill in gross motor activity, the educational therapist reported that he lacked fine motor skill as seen in the use of preschool play materials.

Linguistic Functioning

Tape recorded samples of Joe's vocalizations were made throughout his milieu at Seaview. His efforts to communicate were limited to direct, specific manipulation of the adults in his environment. Frequently, these efforts were accompanied by vocalizations; however, his vocal output was not used for communicative purposes but grossly reflected his pleasure or distress. His few vocalizations were restricted to resemblances of a limited number of vowels and consonants but with a wide range of pitch level and loudness. The most often heard vowel sounds were "ih" and "uh" especially during laughter. There was also an occasional loud raspy "aaah," "ah," and "eh" occurring as sudden staccato yells. He was heard to produce the simple reduplicated phonemic productions of "we we we we," "wa wa wa wa," "dee dee dee dee," "muh muh muh muh," and "way way way way"; however, these were even less frequent than his vowel productions.

Asocial Behavior

Several stereotypic behavior patterns were maintained. The most prominent of these was his habitual manipulation of his tongue. He demonstrated a rather remarkable tongue extension by practically touching his chin. As part of his dominant hand-to-mouth pattern, he would hold an object before his open mouth with his tongue fully extended, and would lick it by nodding his head up and down.

Joe frequently exhibited periods when he would avoid eye contact by vacantly staring off into space. He rapidly vacillated between screaming and a peculiar giggling noise. These vocalizations were usually accompanied by extensive facial contortions, hand flapping, or repetitive, vigorous thrusts of his arms in a pushing gesture. Because of the rapidity of his shifts in mood, this behavior was viewed by the staff at Seaview as part of a possible hallucinatory process.

Response to Frustration

Ordinary environmental sounds frequently upset Joe. He responded defensively to both animate and inanimate noises of moderate intensity. He would cringe, cover his ears with his hands, and try to hide in closets, fireplaces or dark corners. This behavior was often accompanied by crying and whimpering.

When he was thwarted in pursuing an activity, he would rigidly persist without varying his approach. When limits were rigorously set, his eyes would fill with tears, he would abandon his goal, throw himself on the floor screaming, and cover his ears. If he were particularly distressed, he would bang his head with his hands or against the floor, wall, or bench.

Response to Environmental Change

When Joe's routine was changed or he was shifted from one group to another, he displayed an intensified frustration response and would revert to more primitive modes of behavior in all areas of functioning. He would spend most of the day hiding under beds, tables, or in fireplaces and closets.

Response to Children

Joe's life was devoid of any socially meaningful play with other children. He was unable to tolerate the disturbances produced by other children. He was frequently placed in a group with a particularly aggressive child who was prone to sudden, violent outbursts. As Joe had been attacked by him frequently, he was terrorized whenever he was in the proximity of this child and would retreat under a table or in a corner, perceiving this as a safe hiding place. He rarely displayed any aggressive behavior himself; however, on rare occasions he was known to push or shove other children if they interfered when he was jumping on the trampolene.

Response to Adults

He actively sought affectionate contact in the nature of infantile cuddling with the adults in his environment. When held in the lap of an adult he would become atonic, requiring total support for his body.

Whether verbally or physically chastised for unacceptable behavior, Joe became particularly overwhelmed and readily cried.

He expressed his needs through gross manipulation of adults. When he wanted a piggy-back ride, he would lead an adult by the hand to a table so that he could use the table to climb onto their shoulders. If he found an adult who would participate with him in such a physical activity, he would actively pursue the person to ritualistically continue the activity. He was so vehement in his persistence that adults withdrew or actively rejected him in order to terminate the activity.

Health and Physical Status

Apart from his major problems with constipation, he had frequent temperatures and fever blisters. He occasionally presented tonsillitis, impetigo, and sprained ankles.

Immediately prior to the period of experimental therapy, his height and weight were recorded as fifty-three inches and sixty pounds. (10:4)

Pediatric Neurological Consultation

During the course of therapy, a consultant to the research staff reviewed the case history and in observing Joe felt that although there were enough dynamics of early trauma to suggest schizophrenia, behaviorally he appeared to be more like a brain injured child than a schizophrenic. (10:5)

Experimental Therapy

Although Joe was physically well-formed for a ten year old boy, his stature was that of an eight year old. He appeared pale, haggard, and disheveled.

During the sixty-seven sessions of relationship therapy with the female clinician, his emotional status was markedly affected by persistent toileting problems. Infantilisms and gross lethargy typified his behavior. Joe made diverse efforts to communicate but he had no functional speech.

Although Joe was receiving .5 grams daily of the sedative Glutethimide (Doriden), this was discontinued during the first month of therapy.

First Month (1st through 12th session)

Joe spent the entire initial session exploring the play materials in the therapy room. His only direct contact with the clinician was made with eyes averted when he casually accepted a piece of Plasticene from the clinician's hand. As part of his exploratory activity Joe patted, tapped, and fingered the media; however, his predominant mode of exploration was oral. He would extend his tongue to its maximum length and, by moving his head up and down, lick each object. He also attempted to orally incorporate both small and large objects. He mouthed, licked, and chewed the nursing bottle and attempted to force its entire base into his mouth while rotating it for maximum stimulation. At times he gagged when overextending his tongue.

There were no observable responses to the clinician's reflections of his feelings or statements describing his behavior. His unresponsiveness to her verbal efforts to limit his ingestion of the Plasticene necessitated its removal.

He approached BoBo, the puncho toy, in a completely disinhibited and unrestrained manner. His manipulation of it included most of the possible variations: licking, kicking, pushing, punching, slapping, lifting, throwing, turning, lying, and rolling on it. Whenever the puncho rebounded, Joe would cringe and assume a defensive posture by covering his eyes with his forearm and cupping his hand over one ear; however, this in no way deterred his continued pursuit of rough play with BoBo.

Among the stereotypic behavior patterns which he exhibited during the first session, and which persisted over the entire course of therapy, was the ambidextrous juggling of an object into the air while pacing about the room. On the rare occasions when he dropped the object he visually would follow its movement, lethargically retrieve it, and then resume the activity. He also habitually and repetitiously opened and closed his mouth, rapidly moving his lower jaw up and down through its full range of movement. It appeared as if he were taking great gulps of air as he snapped his mandible in its socket.

All of his activities were interspersed with significant pauses when he stared blankly off into space as if he were in a trance.

Extensive vocalizations were heard throughout this first session including explosive grunts, a whinnying laugh or giggle, and the reduplicated consonant sounds of "m," "n," "p," "d," and "b." He did not exhibit any observable response to the clinician's imitations of his vocalizations.

He resisted the clinician's attempts to conclude the initial session. For the following three sessions he continued to communicate his distress about leaving by lying on the floor and actively pushing the clinician's beckoning hands away. As the clinician explained the limits of their time together, he covered his ears and said, "no, no, no, . . ."

Joe was the first child to be seen in the morning and he became readily upset when he was not taken to therapy immediately upon the clinician's arrival at Seaview. On some mornings, therapy was delayed because he had not completed his breakfast. When this occurred he demonstrated some geographical orientation by coming to the therapy room independently.

His oral needs seemed insatiable as he persisted in orally exploring his environment. When the nursing bottle filled with water was available, Joe indicated no recognition of its function or purpose as he indiscriminately chewed on its bottom, top, or side; yet, never sucked on the nipple. He discovered that it contained water through his accidental manipulation while juggling it. By shaking the bottle, he delighted in sprinkling water on his extended tongue. After a vague attempt to pull the cover from the bottle, he sought the clinician's help to remove it. In the hope that he could learn to unscrew the top independently, the clinician provided extensive verbal directions accompanied by gestures; however, during the entire course of therapy he did not learn this task.

The forerunner of many sessions in which Joe and the clinician experienced close affectionate contact occurred during the third week of therapy. Joe was brought to therapy in a highly anxious state which was precipitated by the fearsome experience of being attacked by a particularly aggressive child. Under these circumstances, a distinctly different pattern of behavior occurred. He spent the entire session nestled in the clinician's arms. He whined and cried, covering his ears and eyes, and appeared seemingly inconsolable. As the clinician rocked and sang to him, his acute distress was gradually dissipated. It was during this close physical contact that Joe evinced interest in the clinician's oral cavity. He made persistent efforts to press his forefinger into the clinician's mouth. This manipulation was resisted and imitated in kind by the clinician. After several exchanges, this interaction assumed the character of a game with concomitant laughter and giggling. Consistent with the therapy rationale emphasizing the importance of communicating acceptance, the clinician allowed Joe to draw her finger into his mouth. Unfortunately, he used the clinician's finger as he did inanimate objects; namely, to bite. The clinician allowed Joe to put his finger into her mouth in order to demonstrate to him that aggression would not be met with aggression. In his exploration of the clinician's oral cavity, he dug his fingernail into her palate causing great discomfort. The clinician attempted to deter Joe from further pursuit of this activity by substituting the pacifier; however, he continued undaunted. It became apparent that all of the clinician's efforts to verbally explain the limits were not comprehended. With verbal and gesture explanations, the clinician tried to communicate that he could look into her mouth, but could not use his fingers to explore her mouth. He then substituted his tongue for his finger. The extent to which Joe used his tongue as a primary instrument for sensing became explicitly manifest when he repeatedly attempted to thrust his fully-extended tongue into the clinician's mouth.

In an effort to satiate some of Joe's oral needs, balloons and bubble blowing materials were introduced. The clinician provided him with verbal explanations and visual models; however, during the entire course of therapy he did not learn how to either inflate a balloon or blow bubbles. Through specific physical manipulation of the clinician he insistently sought these activities. With similar persistence, he would thrust broken pieces of balloon into the clinician's mouth as if he expected that these bits and pieces could be inflated again. The frequency and regularity with which this occurred suggested a basic perceptual dysfunction.

Water play became a major focus of many of the therapy sessions. His initial activity at the bathroom sink was the filling and refilling of glasses of water using both faucets. He was completely absorbed in repetitiously pouring glass after glass of water down the drain. As part of his water play he would take a glass of water, toss the water a few inches into the air, and attempt to catch it in the glass. He showed his intense delight in these activities as they were usually accompanied by much giggling and laughter. In his exploration of the sink he recognized the function of the stopper but was unable to set it in place because he would invariably have the attached chain entwined around it.

While playing at the sink, Joe occasionally interrupted his activities to flush the toilet. He would stand gazing into the toilet bowl as the water swirled downward. This was always accompanied by the attempt to shut out the sound of the rushing water by covering his ears with his hands.

Second Month (13th through 25th session)

Variations and modifications in Joe's play patterns were observed during this month. A quantitative increase of interaction within the therapy relationship occurred with the increasing

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frequency of his manipulations of the clinician. During these periods of close physical contact, a feeling of mutual acceptance was thoroughly communicated. The following incidents were particularly representative of the quality of his manipulation.

While Joe sat in her lap, the clinician casually rolled the Plasticene on the table. He passively accepted the clinician's attempts to guide his hands in this activity. When she would pause, he would replace her hand on the Plasticene, clearly indicating his wish for her to continue. Whenever he manipulated the clinician it was invariably accompanied by an additional expressive effort of vocalizing. His handling of the clay was representative of his approach to most objects. He smelled the clay, attempted to eat it, ambidextrously juggled it, and held it to his ear as if it were a source of sound. When the clinician limited his eating of the clay, he tried to force it into her mouth.

During periods of close physical contact, the clinician imitated Joe's vocal output. He would continue to produce various vocalizations as long as the clinician imitated him; however, he never imitated any of the clinician's variations or modifications of his vocalizations. He showed intense curiosity about the source of the sound as he fingered the clinician's lips or held his hand against her throat. When he was not interested in joining in the imitative vocal play, he clearly communicated this by covering the clinician's mouth with his hand or by placing both of her hands over his ears.

Water play continued to consume a large portion of each session and occasionally an entire session. He modified his play at the bathroom sink by incorporating the nursing bottle as an additional vessel for pouring water down the drain. He began to drink from the uncapped nursing bottle, first by dipping his tongue into the neck of the bottle, then drinking from it by holding the rim of the bottle in his teeth and tilting his head backward. As he tilted his head back, he was attracted by his image in the mirror which would produce an outburst of laughter causing him to spew the water from his mouth. Whenever this occurred he spontaneously would wipe the drops of water from the wall and the mirror. Incongruous with this demonstration of social learning were his attempts to use the clinician's blouse to wipe his face and body. When his own shirt was wet, he exhibited distinct discomfort as he pulled it away from his body. A similar awareness of bodily discomfort was seen when he sought the clinician's help to wipe his wet sneaker by lifting his foot.

Third Month (26th through 35th session)

Periodically, Joe exhibited extreme discomfort caused by his prolonged periods of bowel retention. He sought aid and comfort from the clinician during several sessions in this and subsequent months. He would climb into the clinician's lap an place her hand on his abdomen or back while emitting distressful groaning vocalizations, all of which communicated his desire to have his abdomen and back massaged. An additional gesture communication indicating his need to toilet was seen as he would pace in and out of the bathroom with one hand clenched over his rectum and the other on his genitals.

The clinician discovered that her role during these periods had to be completely passive as Joe would vehemently reject being led to the toilet. Following repeated sorties to the bathroom with momentary pauses to examine the toilet, eventually, he would unfasten his trousers and sit on the toilet. While sitting there he would repetitiously thrust his arms violently forward while emitting angry vocal noises. He indicated his need to have his rectum wiped by bending forward.

Joe's stereotypic play patterns remained a prevalent part of the behavior observed in each therapy session; however, further elaboration and variation in his play continued to appear during this month.

Unable to express himself verbally, Joe demonstrated his wish to have the clinician blow bubbles for him by manipulating her hand toward the bottle of bubble blowing liquid. He would visually follow the bubbles, breaking them with his tongue, head, and fingers. Whenever the clinician offered him the bubble blowing stick, he would mouth and lick it as one would a lollipop; but he never blew bubbles. As part of the clinician's efforts to show him how to blow, she blew on the back of his hands and tried to have him feel the controlled exhalation of air by placing his hand on her thorax. Joe perseveratively sought this tactile stimulation by thrusting his arm in front of the clinician's face and by positioning her head in order to have her blow on his wrists and arms. The clinician's efforts were not successful using this type of visual and tactile stimulation. It was interesting to note that during his regular water play, Joe was often observed spontaneously blowing bubbles in a full glass of water. He did this without using his hands by holding the glass or bottle between his teeth.

Increasing amounts of time were spent in the bathroom absorbed in water play. While he played at the sink, the clinician would participate to the fullest possible extent. Together they explored the multitude of variations in water play which served to reinforce the atmosphere of mutual acceptance. Some of the variations in water play which the clinician had introduced were incorporated by Joe several sessions after they had occurred.

In addition to his play at the sink, Joe began to climb about on the bathroom fixtures. Using the clinician for support, he would climb on the bathroom sink so that he could get into position for a piggy-back ride. With the same goal in mind, he would balance on the edge of the bathtub or climb onto the toilet seat. The clinician tried to limit this behavior because his weight was beyond her capacity; however, he was never deterred by any verbal or gesture limitations.

On several occasions when the nursing bottle had been left in the toy closet, Joe wandered aimlessly about the room but did not display any organized plan of search. It was not clear that he wanted the nursing bottle until he opened the cabinet above the bathroom sink. The clinician then beckoned him to the open toy closet door, explaining that the nursing bottle was still in the closet. He stood before the open door, picked up various toys and set them back on the shelf, but did not locate the nursing bottle although it was in clear view. The expression of his feelings of frustration through distressful vocalizations prompted the clinician to hand him the nursing bottle. His delight was unmistakable as he burst into pleasurable vocalizations, smiled broadly, and immediately began his usual water play. Through such experiences with Joe it became readily apparent that he was severely limited in language comprehension. This episode was representative of many demonstrations of his need for sameness, his severely limited communicative and problem solving ability, as well as disturbances in visual figure-ground problems.

By the end of the third month of therapy, the clinician had accumulated numerous examples suggesting that Joe had a basic auditory dysfunction. When heavy objects dropped to the floor with a loud and sudden crash producing low-frequency noise, Joe never exhibited a startle response. Remarkably different behavior was noted whenever loud, high-frequency sound was present. He consistently covered his ears whenever the high-pitched squeal of the water faucet was heard. His exhibition of auditory discomfort was reminiscent of the clinical manifestations of recruitment as found in cases of hearing loss due to nerve damage.

Fourth and Fifth Months (36th through 57th session)

Over the next two months a gradual shift occurred from water play to a variety of balancing games on BoBo. Joe would maneuver the clinician into position so that she could assist or support him in balancing. This activity frequently consumed entire sessions. Joe's best motor performance was seen in these balancing games on the puncho toy. Although he exhibited adequate gross motor skill, all such activities were executed in a slow, lethargic manner. This was especially noted when he mounted the stairs to the therapy room two steps at a time, but at a snail's pace.

Because of Joe's languor and sluggishness, opportunities to assess his fine motor skill were limited. Significant portions of each session were spent seated in the clinician's lap where he exhibited a predominant hand-to-mouth pattern as his manipulations of small objects remained essentially oral. While he showed some skill in juggling an odd-shaped building block, he never displayed any spontaneous interest in forming constructions. After repeated presentations, the clinician was able to encourage him to construct a three-block tower by restricting her communications to gesture alone. When the clinician tried to involve him in a game of catch he showed no interest in catching the ball, apathetically returning it to the clinician by batting it with the palm or back of his hand.

The clinician's imitations of Joe's behavior communicated her acceptance of him and provided a basis for interaction. In the earlier months of therapy, he showed no interest in imitating the clinician; however, a turning point in the development of the relationship occurred as he began to demonstrate a steadily increasing interest in imitating fragments of the clinician's behavior. One example of this was seen when he cranked the handle of the musical jack-in-the-box in a direct imitation of the clinician; however, he turned the crank in the wrong direction, seemingly unaware that he was distorting the tune. He showed no anticipatory or startle reactions as the jack would pop out of the box.

The most poignant example of the development of his new interest was seen when he began to repetitiously pull the clinician's head to his ear in order to have her sing directly into it. It had been the clinician's habit to sing and vocalize extensively to him. While she sang he would spontaneously examine the visual and kinesthetic aspects of her voice production by fingering her lips and larynx. Following this interaction, he began to attempt to imitate the clinician's movements of her oral mechanism. After many such episodes he was able to imitate "ah" and "oh."

Bizarre behavioral characteristics continued to occur in relation to his bowel retention problem. An aberrant pattern, not previously observed in therapy, was manifest as he scurried about the room on his heels, flailing his arms in space, and violently shaking his head from side to side while grimacing and crossing his eyes. The convulsive features of this behavior were not seen again, and he resumed his usual play patterns in the following session.

On another occasion he arrived for therapy in a highly agitated state, screaming and throwing himself on the floor, seemingly suffering from intense abdominal pain. It was reported that he had exhibited this behavior for twenty-four hours and had had very little sleep. Although completely acceptant of the clinician's efforts to soothe him, he was inconsolable.

Sixth Month (58th through 67th session)

In the final month of therapy, the relationship developed further through the continuing reactive process. Joe communicated with the clinician exclusively through gesture and specific manipulations accompanied by incomprehensible noises.

His overall behavior had been marked by lethargy, but during this final month of therapy his motor activity increased. He seemed delighted with gross motor movement as he pranced about the therapy room with a high-stepping gait.

Having once initiated a game of somersaults, the clinician found that his pleasure in this activity was seemingly insatiable. As soon as he completed one reverse somersault, he would reposition himself on the floor and seek to repeat this activity through gesture, by thrusting his legs at the clinician. He would continue in this perseverative manner even when the clinician's strength was exhausted.

Joe showed a deficiency in fine motor skills requiring social learning. He was unable to fasten the zipper on his jacket without the clinician's aid. Once the clinician had started the zipper, he would respond to her gestures and complete the task. Joe had not learned how to lace or tie his shoes; therefore, the clinician provided him with the opportunity to practise by using the Playskool shoe lacing trainer. Joe's lack of interest in this activity was clearly demonstrated as he feigned the movement of putting the lace through the holes without looking at the task.

His behavior continued to suggest perceptual dysfunctions. Because of the established relationship which provided the clinician with a sensitivity of the child's capacities and frustration tolerance, it was possible at this time to innocuously interject into the play situation some simple perceptual and psychomotor tasks. By presenting a lighted match behind the one-way vision mirror, an observer recorded Joe's capacity to attend to and follow a moving light. He responded to this particular stimulus by attempting to locate the light source within the therapy room indicating that he recognized the function of mirrors. He sniffed and licked the mirror as he visually followed the moving light.

Joe, like the other children in the study, was particularly fond of "sweets." Using candy to motivate him, a useful technique for assessing some of the levels of his perceptual functioning was developed through the various presentations of four plastic cups, (red, blue, yellow, and white). A piece of candy was placed under one of the inverted cups and by modifying the presentations by varying the number of cups and the movement of the cups, it was found that he was visually able to discriminate color. When Joe was prevented from seeing the color of the cup under which the candy was placed and had to depend solely on the clinician's verbal directions he repeatedly experienced failure in locating the candy. After several trials limited to the auditory presentation he abandoned the task by leaving the table.

Over the entire course of therapy Joe had demonstrated a severely limited capacity for language comprehension. Only four statements, repeatedly made by the clinician, elicited appropriate responses. Joe had been conditioned to the phrases, "No," "Close the door," "Get your coat," and "It's time to go now."

Because Joe had shown a particularly variable response to sound, amplified sound stimuli were presented through a set of standard earphones during the last few sessions of therapy. Although the clinician's verbalizations were amplified well in excess of the level of normal speech, Joe repeatedly sought this intensified stimulation. He attended to the amplified sound, ceased all activity, and stopped vocalizing.

Therapy was terminated by gradually reducing the frequency of the sessions.

Case Summary

Medical History

Apart from the possible complications resulting from a cesarean section delivery, Joe's medical history was overshadowed by his experience of early trauma in relation to a highly neurotic mother, a psychotic father, and a possibly psychotic sister. Because his mother was killed by his father resulting in the disintegration of the family unit, Joe experienced a variety of temporary home and institutional placements. His early pediatrician, the primary source of information regarding his early development, felt he was retarded because of his lack of speech and slow development.

In the absence of any clear-cut evidence of neurological damage, two child study centers diagnosed him as a schizophrenic or autistic child based on clinical observations and his aberrant early history.

Previous Therapy and Educational Experience

There was no record that Joe had received any psychotherapy; however, he had spent a year in a residential care program.

Residency at Seaview

Joe was admitted to Seaview when he was seven years and seven months old. Three years and one month of his residency were studied and revealed that he remained essentially dependent upon adults in all activities of daily living. At the end of his second year, he began to feed himself. With adult supervision, he was able to dress himself with the exception of tying his shoe laces. While he achieved independence in urinating, episodes of prolonged bowel retention and disturbed sleep patterns persisted over the years.

A diminution occurred in his active attempts to seek safety by isolating himself from his environment in closets, cupboards, and dark corners; yet, he remained a very cautious, frightened child. Joe posed relatively few management problems because of the severity of his withdrawal, his lethargy, and his passivity.

His ability to communicate remained at the level of primitive manipulations of the adults in his environment.

His stereotypic behavior patterns of endless pacing, orality, facial grimacing, and the flailing of his arms in space were thoroughly entrenched.

Experimental Therapy

Observations and impressions gained during the sixty-seven sessions of experimental therapy were as follows:

Nature of the Relationship

Dependent upon the relative status of Joe's physical well-being, he vacillated between periods in which he sought affection and warmth from the clinician and periods in which he was consumed in stereotypic play. In the absence of speech he expressed his needs through gesture communication and specific manipulation of the clinician. He actively sought play which involved direct body contact.

Imitations of Joe's behavior and vocalizations were successful in communicating acceptance, thus providing a foundation for the growth of the relationship. During the process of therapy he developed an intense interest in the source of the clinician's vocalizations making every effort to imitate her simple phonemic productions. His extensive pattern of withdrawal seen in the milieu of Seaview did not appear within the atmosphere of security and acceptance provided in therapy.

Perceptual Processes

Joe's responses to external stimuli which were observed in both structured and unstructured situations were as follows:

Olfactory.--When presented with an unfamiliar stimulus, Joe included this sensory modality in his exploration.

Gustatory.--There was no clear-cut evidence of any discriminatory process in this sensory modality as he mouthed and ingested many nonfood items; yet, he showed definitive food preferences and aversions.

Tactile-kinesthetic.--Joe constantly exhibited a preference for oral-tactile manipulation of objects and materials to the preclusion of other sensory modalities. He perseveratively used his tongue as an additonal appendage as if it were an antenna.

Response to Pain.--Joe was responsive to painful stimuli as he clearly demonstrated his ability to localize pain or bodily discomfort.

Visual.--Joe's acuity was not suspect. He exhibited figure-ground disturbances and overattended to movement. He was able to discriminate primary color. Attempts to assess his discriminatory ability for form were inconclusive.

Auditory.--His auditory acuity was questionable as he exhibited a variable response to auditory stimuli. He covered his ears with his hands in the presence of noise, but especially in the presence of high-frequency noise. While he overreacted to high-frequency noises, he rarely attended to ordinary environmental sounds.

Motor Behavior

He had good coordination and control in gross motor activity. Even though a lethargic quality pervaded all of his motor behavior he exhibited endurance, perseverating in a variety of bodily movements for hours. Severely impaired in social learning, he rarely engaged in activities requiring fine motor skill.

Vestibular Functioning.--As Joe actively sought antigravity play, especially on the trampolene, he was not suspected of having any vestibular disturbance.

Linguistic Functioning

Receptive.--With the exception of four or five phrases to which Joe had become conditioned, he failed to exhibit any comprehension of language processes. Because of his extremely delayed response to auditory stimuli and the number of repetitions required it was difficult to ascertain whether he was responding to the gestalt of situations or to the auditory stimulus.

Expressive.--An examination of his peripheral oral mechanism revealed no structural abnormalities with the exception of a slightly enlarged tongue.

Joe produced a variety of vocal noises which became distinguishable as reflections of his moods. Some of his sound productions, while they had no specific communicative value, served to satisfy his intense need for oral-tactile stimulation. Late in the therapy process, Joe began to attempt to imitate simple phonemes produced by the clinician. His desire to express his needs was particularly evident as he frequently accompanied his specific manipulations with vocal noises.

Time and Spatial Orientation

Minimal awareness of time relationships and some degree of geographical orientation were demonstrated by Joe's anticipatory behavior prior to coming to therapy and his independence in making his own way to the therapy room. Because of his limited range of activity it was not possible to assess his comprehension of spatial relationships. The only example of his recognition of a spatial relationship was seen when he demonstrated his understanding of the function of mirrors.

Reaction Time

His extremely delayed or absent responses to sensory stimuli were the clearest reflection of his general apathy.

Learning

Attention.--When absorbed in either stereotypic play or when involved directly with the clinician, perseverative (over-attending) behavior severely limited his possibilities to learn. It was extremely difficult to facilitate a shift from one activity to another because of the severity of his perseverations.

Imitation.--Although delighted by the clinician's imitations of his vocal noises, it was not until the final months of therapy that he made feeble but direct imitations of the visual, auditory, and kinesthetic cues provided by the clinician for simple phonemic productions.

He demonstrated a limited capacity to imitate visual models when, several days after they had been introduced, he incorporated some of the clinician's variations in his water play.

Memory.--He gave the appearance of being unable to maintain a symbolic representation of absent objects. His recognition of potentially hazardous or particularly threatening situations suggested that certain associations through conditioning had been formed. After many repetitions, he was able to retain and act independently in some activities associated with his normal routine.

Problem Solving.--Because of the extensiveness of Joe's perseverative behavior, his problem solving ability was extremely limited. Once he had initiated a course of action, he would persist indefatigably, failing to recognize possible ways to circumvent obstacles preventing the attainment of his goal. Through extensive manipulation of the adults in his environment, he attempted to satisfy his basic needs for water, food, and affection.

Case History of George

Date of Birth: 11/2/46

Family History

At the time of George's birth his father, an industrial executive, was thirty-nine years old and his mother, a practicing attorney, was thirty-four years old.

George was the fourth of five children and the only boy. When he was born his sisters were six, four, and two years old. The fifth child, a girl, was born when George was three years and two months old.

A year after the birth of their last child, George's parents were divorced.

Birth Record

George's mother reported that she was active, well, and worked during her pregnancy. She stated that George's delivery was without complication and that she resumed her law practice shortly after his birth.

The only information available in the hospital record noted that George weighed seven pounds, one ounce at birth, and upon discharge was described as "a well-developed boy with no deformities seen, weighing six pounds, nine ounces."

Infancy (First-Second Years)

Because George's mother was occupied by her law practice he was cared for by a governess during the work week.

His mother reported that he was bottle fed as she had "no milk." She also recalled that his first tooth erupted at eight months, weaning was completed at twelve months, and that there were no feeding problems.

She stated that he sat alone at six months, walked with support at ten months, walked independently at twelve months, and climbed stairs at two and a half years. She observed that he was extremely cautious in all his movements.

George was reported to have developed a limited vocabulary of nouns. His parents felt that he heard as he responded to loud noises, recognized some environmental sounds, and seemed to understand when people talked to him.

In retrospect, his mother recalled that until he was about two and a half years old his development followed the same pattern as that of the other children in the family except for somewhat slower speech development. There was nothing in his behavior up to that time that appeared abnormal to either his mother or to the governess.

George's mother reported that during his second year she became pregnant and was very much absorbed in her work and her marital problems. During this period it was felt that George's behavior changed. In outbursts of "temper" he began to rock and bang his head with his fists which provoked nosebleeds.

Unfortunately, George's early pediatric record was unobtainable.

Third Through Seventh Years

For the next five years George was seen as an outpatient for psychiatric treatment at a child guidance center located in a large metropolitan area. George was seen daily in the clinic's nursery school as well as individually by a child analyst while his parents concurrently received therapy. Although repeated attempts were made to secure the reports of the center's diagnostic studies and George's progress in therapy, they would not release any information.

George's mother reported that during his psychiatric treatment, he was referred to a medical center for diagnostic study when he was six years old. As the consulting neurologist was unable to locate George's chart, he was only able to report that, "My recollection is that all of his organic studies were negative at the time of his office visit." While at this medical center, George was seen in their Speech and Hearing Department.

Speech and Language Evaluation

> ". . . He had very little understanding of language and used no intelligible speech. He made unintelligible grunting noises most of the time with no speech being initiated on his part.
>
> "He was beginning to feed himself, was doing simple tasks such as putting on his shoes and socks and bottoning his shirt. It was reported by the governess who brought him that he was having fewer temper tantrums than he had in the past. During these tantrums he was described as stiffening up, banging his head and nose and trying to hit anybody who came near him.
>
> "I also noted that he was not toilet trained and was very retarded in his play habits.
>
> "The governess emphasized his love for music and his preoccupation with musical tops.
>
> "Impression.--Delayed speech due to mental retardation, complicated by emotional problems rather than due to hearing deficiency. Although his reaction to sound was inconsistent, it was suggested that he was hearing but not always using hearing to his best ability."

Eighth Through Fifteenth Years

Admission to Seaview

George was discharged from the child guidance clinic with the recommendation for institutionalization and was admitted to Seaview for residential care. He was eight years and eight months old. As Seaview did not use a pre-admission questionnaire at that time, his status was not recorded.

Six months after his admission an ophthalmological examination was made because of George's propensity for holding objects very close to his eyes.

Ophthalmological Examination

> "Eyes examined under atropine cycloplegia. Ocular media clear. Macular regions of retina well visualized and appear normal. General retinal background appears normal as is the retinal vascular structure. The optic discs could not be visualized.
>
> "Retinoscopy showed a moderate refractive error that could only be estimated. He appears to have hyperopia of about two diopters. The extra ocular muscle balance was normal and no nystagmus was present.
>
> "Impression.--Although it would be desirable to visualize the optic discs, I feel convinced this could be done only under general anesthesia. In any case, no evidence of ocular pathology was discerned nor was there a sufficient refractive error to require the wearing of glasses. I do not believe that it is possible to take any measures that could improve his vision." (9:2)

Residency at Seaview

The following outline of George's behavior in the milieu of Seaview was compiled from the direct observations of the research staff and an examination of the school records covering a period of six years and a half of his residency. (8:8 - 15:2)

Activities of Daily Living

Eating.--Over the years George's appetite was erratic. On occasion he would refuse particular foods but consume large quantities of them at other times. With the exception of a strong desire for sweets, no definitive pattern of likes or dislikes was revealed. During his early years of residency there were times when it was necessary to feed him in order to get him to eat anything; however, with the onset of pubescence he ate with gusto.

George made minimal use of spoons or forks, persisting in the use of his fingers. While he was essentially passive in most dimensions of his milieu, he displayed many outbursts of anger or aggression in the dining room. A rage would be provoked when other children would "snitch" food from his plate. Without speech, the only way that he could indicate his wish for an additional portion was to create a storm. He would scream, upset furniture, shove dishes from the table, and occasionally cry.

Sleeping.--Because he roomed with a variety of children who regularly had sleep disturbances, his sleep was frequently disrupted by their nighttime noises and by some of them who sought to crawl into bed with him which he rejected. Despite these disturbances, he managed to average eight to ten hours of sleep each night.

As he entered adolescence it was reported that he was frequently awake for two to three hours during the night. He would wake giggling, presumably to toilet; however, there was no evidence that there was any significant diminution in his longstanding pattern of nocturnal enuresis. He also continued to have bowel movements in bed as often as three times weekly.

Active masturbation with the emission of semen occurred during his fifteenth year.

Toileting.--When he did not have ready access to a toilet and because of his inability to communicate his needs, George continued over the years to have accidents of both bladder and bowel. Although he was able to toilet independently in so far as loosening his own clothing was concerned he did not wipe his rectum and was inefficient rearranging his clothing. Periodic bouts of severe constipation were recorded, lasting as long as five days.

During pubescence sexual excitation became a regular part of his toileting and bathing activities. His night attendants noted his delight in having his genitals washed. Occasionally there were reported ejaculations.

Dressing.--Because of gross deficiencies in adjusting and fastening his clothing, it remained expeditious to dress George. Although he was able to slip into his clothing unaided, he was apt to put his shirt or trousers on backwards. Problems in dressing were encountered when he would try to put his own socks and shoes on. He would repetitiously push his toe into the heel of the sock or put the wrong shoe on his foot. He seemed unable to correlate the shape of his foot with his socks and shoes. He continued to be unable to tie his shoe laces.

Motor Behavior

Left to his own devices George would invariably be found absorbed in his favorite pastime of sifting sand through his fingers. Hours were consumed in spilling sand from one hand to the other, pouring sand over his hair and body, or fingering individual grains. Days, weeks, and months were spent in this form of solitary play except during those periods of his residency when adults were present who actively intervened. Even when indoors, George would explore the folds of his clothing, the cuffs of his trousers, and the crevices of his shoes for any grains of sand which might have settled there. At those times when he was unable to locate any sand particles he would pace around the room while either vigorously thumb sucking or shaking his head from side to side with his arms flapping aimlessly in space. Often, he would interrupt his pacing to rock stiff-legged from side to side. Such hyperkinetic displays were prevalent even when sitting.

He walked with his feet prominently everted. Gross motor deficits were apparent and were quite apart from any problems of social learning. For example, a most significant deficit was his habituated one step at a time mode of descending stairs. No less apparent was his inability to blow his nose. While he had had daily trips to the beach each summer for five years, he had not learned to swim. His play at the beach and in the water was comparable to that of a preschool aged child. In a like manner he had not acquired any skills in using playground equipment.

Linguistic Functioning

Staff notes made during his early years of residency frequently mentioned George's extensive vocalizations which included profuse laughter and humming. Repeated references were made suggesting that George was, "trying to talk." A review of the tape recorded samples of George's vocal behavior acquired in the various dimensions of his milieu revealed that he had become essentially a silent child. Reports by his attendants that he could say, "I don't want to," and "Done, done," were never documented by actual recordings of his vocal behavior. The recordings did reveal that George produced a vocal phrase during periods of distress and crying which sounded like, "I don't want to," but in actuality were reflexive in character and were represented orthographically as, "ah dah-wuh nah no-wah nah."

The lack of clarity in the notes of the staff prevented the formulation of a definitive statement about his language comprehension capacities. It was generally assumed by his attendants that he comprehended language as he readily responded to simple directions such as requests to fetch a particular child. What was not clear was whether he was actually responding to the verbal or the gesture components of such requests.

In craft activities he was reportedly unable to copy the simple geometric forms of a circle or square. He could do preschool type puzzles, string beads, use scissors in a random manner, and blow bubbles. It was reported that, "He could do the alphabet from 'A' to 'P,'" but the circumstances and precise nature of this activity were never specified.

Asocial Behavior

Throughout his residency the lack of verbal communication between George and those in charge of his care contributed to his retardation in social development. An all-pervasive and longstanding habit of thumb sucking had produced a prominent dental-oro-facial deformity. Often, accompanying his thumb sucking, he engaged in uninhibited, overt masturbatory activity. A compulsive touching of things, both animate and inanimate, had been repeatedly recorded. These factors, plus his hyperkinesis, gave him a most bizarre appearance at the age of fifteen.

George epitomized what has been described as autistic behavior. He appeared insolated and isolated, assiduously avoiding any form of contact with other human beings.

Response to Frustration

In the main, George could be described as pleasant, placid, and gentle. There were occasions, however, when he could be provoked to rage. He would become violently aggressive, banging walls, tables, and chairs with his hands, upsetting furniture, tearing buttons from his clothing, and throwing any object which happened to be at hand. During such periods of distress amidst his screaming, he would bite the back of his hand until it bled or strike his face with his fists precipitating numerous nosebleeds. Tears were commonplace during these outbursts.

Response to Environmental Change

With varying degrees of frequency, many changes in staff occurred from year to year. According to the staff's reports, George did not become troublesome and was thought to be unperturbed by such changes.

Response to Children

During his early years at Seaview it was reported that he was unafraid as he would fearlessly approach other children and initiate contact by touching or poking them. Over the years he came to be terrorized by the more volatile and aggressive children although he was larger than any other child in residency. Having experienced frequent attacks by a child with whom he was regularly grouped, he became extremely apprehensive about any form of contact with other children. Placid and severely withdrawn, George did not retaliate when attacked but only sought to avoid contact by maintaining the maximal distance possible. Unfortunately, he was not always successful in avoiding such attacks. Much of his energy was absorbed in defensive behavior. Increases in George's manifest anxiety became an observable index of an imminent rage on the part of his principal tormentor.

Response to Adults

George exhibited marked apprehensiveness about having any physical contact with adults. It could not be determined whether he had actually been abused or brutalized by any adult in his earlier years; nevertheless, the extent of his vehement rejection of any physical manipulation by adults suggested its possible occurrence. He seemed to recognize those adults who were apt to be harsh with him and, by maintaining a constant vigilance, was able to maximize the distance between them. Over the years there were a few attendants with whom George developed positive relationships, allowing them to interact with him. In such relationships he would beam, giggle, and laugh in response to praise or quickly burst into tears when reprimanded or rebuked.

Health and Physical Status

There were no accounts that George had the usual contagious diseases of childhood or any major illnesses; however, persistent constipation, frequent colds, tonsillitis, and otitis were reported. Because of frequent self-induced nosebleeds it was necessary, on one occasion, to have his nose cauterized.

No record of his height or weight was available for the period immediately prior to experimental therapy. It was estimated that he was approximately sixty-five inches tall and one hundred and twenty-five pounds.

During the course of therapy, George required dental attention. His need to have his teeth tended to was only discovered after he had persistently dug his fingers into his mouth causing an abscessed tooth to bleed. This was typical of any hurt or illness and illustrated the extraordinary difficulty of managing his physical well-being in the absence of verbal communication.

Experimental Therapy

Apart from a prominent malocclusion detracting from his otherwise good appearance, George had no observable physical stigmata. He was dark-complected with large dark brown eyes which readily reflected changes in his mood. He was of average build for a fifteen year old boy. During the course of therapy he had an accelerated weight gain so that he appeared somewhat chubby. The secondary sex characteristics of adolescent body and facial hair had appeared just prior to the period of therapy.

George was assigned to the female clinician. During the sixty-three sessions of relationship therapy, communication was profoundly impaired by George's total lack of speech. His most prominent stereotypic patterns of behavior were thumb sucking, hand biting, arm flapping, pacing, and rocking.

For the first five months of therapy George received 90 mg. daily of the tranquilizer Chlorpromazine Hydrochloride (Thorazine). During the sixth month, the anti-convulsant Primidone (Mysoline) was introduced at 150 mg. daily and increased to 250 mg. daily while the tranquilizer was gradually withdrawn.

First Month (1st through 10th session)

In the first session George entered the therapy room in a semieuphoric state giggling, laughing, tossing his head from side to side, flapping his arms in a bird-like manner, and proceeded to randomly pace about the room. When he came near any of the walls, he would gingerly reach out to touch them and quickly retract his hand in the same manner as a person testing a hot iron. Several times during the session he extended his arms and, stretching on tiptoe, made repeated but unsuccessful efforts to touch the ceiling. It appeared as if he were determining the boundaries of the room. He intermittently returned to this pattern of delicately touching the walls throughout the entire session.

With constantly shifting attention George cursorily examined the mirror and with a deliberate sweep of his arm knocked the entire family of hand puppets from the bookshelf. He then grabbed the nursing bottle, filled with water, which he profered to the clinician in a diffuse gesture, suggesting his wish to have her unscrew the top. Having complied, she returned it to him. He immediately poured the entire content into a tray of sand, reached down, touched the wet sand, quickly withdrew, and then moved on to explore the remaining play materials.

In a disproportionate display of aggression, George forcefully crushed the small rubber squeeze toy with both hands. His accompanying facial grimaces and the forceful biting of the squeeze toy were in direct contrast to his usual demeanor of placid passivity. This was unlike any previously observed behavior seen elsewhere in the institution. Continuing in this mood, George began to pummel BoBo, the puncho toy. After slapping it about, he repeatedly raised it on high and sent it crashing to the floor. He pinned it to the floor with his body weight, bent it double, and kicked it about the room. All of this was done amidst paroxysmal high-pitched squeals and laughter.

Continuing to exhibit rapid shifts of attention, George suddenly ceased his onslaught against BoBo and focused on his habituated pattern of sifting sand through his fingers, spilling it from one hand to the other. His hands were brought within inches of his eyes as if he were studying each grain as it tumbled between his fingers. He would gather up handfuls of sand and delight in watching them cascade over his bare arm or leg. Periodically, he would bring clumps of wet sand to his nose and sniff them. A minimal amount of sand had spilt on the therapy room floor but George suddenly picked up the tray and attempted to lift it above his head in an obvious effort to shower himself with sand, succeeding only in spilling the entire contents of the tray on the floor. Although the clinician repeatedly stated the limit that he would have to contain his play with the sand exclusively to the tray, all of this was now in vain, for while the clinician attempted to sweep up the sand, George proceeded to cast it about the entire surface of the floor.

In setting verbal limits the clinician used a well-modulated voice consistent with the therapeutic goals and because it was known that harsh tones tended to evoke catastrophic withdrawals. His lack of responsiveness to the verbalizations of the clinician was thought to be either negativism or a lack of comprehension. Although he had indicated an awareness of the clinician's presence throughout the session by repeated eye contact, he did not give any overt sign of responding to her statements, reflections of feelings, or descriptions of his actions.

The incompleteness of communication in this session was exemplified by the diffuseness of George's efforts to indicate his needs through gesture. He would approach the clinician, hesitantly extend and retract his hand while maintaining constant eye contact. Because of the brevity and the vagueness of his gestures, the clinician was unable to determine their significance.

His vocalizations during this session were qualitatively representative of his productions in ensuing months. The most prominent feature of these sporadic vocalizations, including his laughter, was their marked laryngeal constriction. At times this was so intense that the only sounds emitted were throaty gurgles as air escaped, under pressure, through the glottis. There were paroxysmal high-pitched squeals which further suggested the degree of laryngeal as well as pharyngeal tension. The moments were rare when his laughter assumed a natural melodic pattern. The usual flatness of his laughter and his tendency to produce it on inhalations gave it a bizarre quality.

Within the first few sessions of this month the principal vehicle for interaction became apparent. By imitating George's behavior the clinician quickly communicated the essential quality of acceptance and participation so vital to the therapy process. Among his most frequent stereotypic patterns of behavior were thumb sucking and the covering of his eyes with his hands. When he sucked his thumb, his forefinger was hooked across the bridge of his nose. From time to time he would cover his eyes with his hands in a shy gesture and coyly peek at the clinician through the screen of his fingers. At other times, he would do this with one hand while the other was occupied with thumb sucking. Whenever the clinician imitated these actions George would respond with giggles of delight, remove his hands from his face, then pause momentarily to study the clinician's imitation. Furthering the imitative pattern by attempting to provide an exact model of each aspect of his motor behavior, the clinician would assume his new attitude at which time George would begin the cycle again. These exchanges took on the character of a game. George would keep his eyes fixed upon the clinician waiting for her imitative responses. Although contact was readily achieved at this level, George was careful to maintain maximum distance between himself and the clinician. Accordingly, for the first few weeks the clinician tended to remain seated so as to avoid provoking unnecessary anxiety about physical proximity or the threat of manipulation.

Because of the impracticality of maintaining a tray of sand in the therapy room and the difficulty encountered in the first session, it was the consensus of the research staff that sand would have to be eliminated as a play material. In the absence of sand, George readily accepted clay as a substitute. His initial contact with the clay was markedly similar to the pattern he had exhibited with the sand. He would consume entire sessions pacing about the room shifting a glob of Plasticene from hand to hand. The most expansive expression utilizing clay occurred in the third session. George proved to be quite unlike the passive, compliant, docile, and frightened boy seen in the milieu of the institution as he unabashedly smeared clay on the walls and the window screens. As the clinician's verbal limitations were disregarded, it was necessary for her to attempt to physically restrict him to the table and the floor in the use of the clay. Unlike his lack of response when limits were set verbally, George quickly withdrew at the clinician's first move in his direction. It was clear that he recognized the meaning of the clinician's distainful facial expression; nevertheless, he continued to do that which had been limited. An attitude of excitement and giddiness would overwhelm him as he would furtively glance at the clinician whenever he pursued a previously limited form of behavior. Never quite certain as to the acceptability of his behavior, whenever he engaged in such exchanges he would exhibit a curious admixture of fear and delight which was to become a distinguishing personality characteristic seen regularly in the months to come. It was as if he were seizing upon these fragments of comprehensibility within the interpersonal relationship as a foundation for additional interaction.

Within a few weeks, George's need to establish interaction with the clinician using negative means was supplanted by an increasing number of shared activities. As the relationship developed, imitation grew to be a reciprocal activity. For example, George modified his use of the clay in direct imitation of the clinician's simple variations. Often, they would stand facing one another with George flipping the clay from one hand to the other, then offering it to the clinician and waiting for its return. Should the clinician vary or modify the juggling of the Plasticene, George would tend to incorporate the clinician's pattern when it was returned to him. He took particular delight in copying the act of dropping the clay on the table and embellished his performance by raising it above his head and dropping it so that it struck the table with a pounding thud.

During this and the ensuing months George did not use the Plasticene for any meaningful constructions. His spontaneous use of the clay was principally confined to repetitiously tearing and twisting chunks of it apart, bit by bit, only to press them together again. Whenever he was engaged thusly, he allowed the clinician to participate fully, exchanging and sharing bits and pieces of the clay. He showed an inordinate preoccupation with microscopic fragments of clay, similar to his overattention to individual grains of sand. When he would spot a speck of clay he would deftly pick it up on the tip of his finger and return it to the principal block. This was particularly noticeable during several sessions when he incorporated a toy plastic dagger into his play by attempting to cut the clay with it. As this toy was entirely too flexible to be used efficiently as a cutting instrument, it shredded the Plasticene leaving many fragments on the table and on its blade. At these times, George would become thoroughly absorbed in meticulously collecting each speck.

This type of distractibility was also apparent whenever a new or different object was in the room. On one occasion, a box of facial tissues happened to have been left on top of the recording cabinet. As in all other situations, George gave no preliminary cues which might "telegraph" his actions, but abruptly interrupted his activity, approached the cabinet, and reached towards the box of tissues. As he was unable to reach the box, the clinician offered him a tissue despite the fact he had no manifest need for it. In a robot-like movement he passed the tissue across his face in a crude approximation of a nose wiping gesture and discarded it on the table. With this act, his interest in the tissue was dissipated.

Throughout the six months of therapy George continued to exhibit an inordinate amount of distractibility for minutiae. Should he spot any bit of dust, sand, or thread in a distant corner of the room, he was apt to immediately cease whatever activity he was engaged in to pursue whatever crumb had caught his attention.

In the course of this month, George's stereotypic modes of behavior of arm flapping and rocking were exhibited in varying degrees of intensity. The extent to which he manifest these forms of behavior was found to be in direct proportion to the degree to which he was tense, excited, or fearful. From session to session he exhibited vast shifts in mood. At one time he might arrive in a state of quiescence and remain silent throughout the session; at another time he might be highly agitated and severely hyperkinetic, emitting constricted vocal noises; while during still another session he would appear euphoric, full of giddy laughter and squeals of delight. On one occasion during this month he was especially preoccupied with massaging his erect penis through his trousers and rubbing it against the edge of the table. Even though actively engaged in autoerotic stimulation of his genitalia, it was possible to distract him.

During the last two sessions of this month a dramatic change in George's demeanor occurred. He suddenly lost all interest in any form of interaction with the clinician, seeming to prefer to sit alone on the windowseat, sucking his thumb and covering his eyes with his hands. Whereas this activity had formed the basis for much interaction during the month, he now rejected the clinician's attempts to become involved with him. It was not until the last session that the cause of George's withdrawal was ascertained when he removed his thumb from his mouth covered with blood. He had been digging his thumb into an abscessed gum associated with a decayed molar which required extraction. George had sat silently, unable to communicate the source of his discomfort.

Second Month (11th through 20th session)

At this point in the therapy process it was clearly established that George responded positively whenever it was his time to go to therapy. Often he would bound down the hall to the therapy room emitting squeals of delight. Many sessions began with expressions of exuberance as he would charge about the room, kick or heave BoBo from one corner to the other, dump out the bag of building blocks and scatter them by kicking them about the floor. He was in a period of obvious acceleration in size and strength and appeared to be reveling in his adolescent development. He had come to realize that within the confines of the therapy room he was able to be expansive and essentially disinhibited. This sense of freedom, combined with his unbridled energy and lack of impulse control, posed potentially hazardous situations. When he would throw objects about the room it was necessary that the clinician actively intervene. This was successfully accomplished by diverting his energies into shared activities. For example, he would methodically search out each of the scattered blocks and return them, one by one, to the sack which the clinician held open for him. Should any block be missed and discovered later during the session, he would abandon whatever activity he was engaged in at that moment to recover the block.

Play with Plasticene had constituted the original basis for interaction and it had now become an integral part of the activity of most sessions, continuing thusly throughout the entire course of therapy. When clay was not set out prior to his arrival, he would take the clinician by the hand and lead her to the toy closet door where he would gesture crudely by thrusting his hand in the direction of the lock. Although the clinician repeatedly set the model and encouraged him to act independently by showing him how to open the door, he persistently sought her assistance.

Once access to the closet was gained, he would search the shelves randomly until he came upon the clay. His plan of search in this, as in other situations, was markedly inefficient and disorganized.

As George had shown no spontaneity in selecting alternative play materials it was necessary that the clinician offer new choices and variations of their possible uses. In an effort to channelize his energies, the clinician showed George that he could pound the clay with a toy wooden mallet. Readily accepting the clinician's model, he would vigorously pound the clay for a few minutes; however, his most frequent contact with the clay remained perseverative and unchanged; spilling it back and forth from hand to hand. When the clinician introduced balls and balloons, George manipulated these objects in his habituated pattern just as he had done with sand and clay. The potential variations of play incorporating balls and balloons which the clinician introduced were readily accepted by George. When, during a game of catch with the ball or the balloon, it fell beyond his field of vision it was as if it no longer existed; however, after the clinician pointed to its location, he would retrieve it and begin the game again. These shared activities provided an opportunity to observe George's awkward and inept handling of play materials which should not have been a problem for a boy of his age.

The maximum amount of involvement, freedom from tension, and concentration in any activity which was pursued over the entire course of therapy were experienced when blowing bubbles. Once aware of the availability of the bubble blowing material, George frequently selected it over other media which were in the closet. Although he had not mastered precise breath control, he was able to crudely produce bubbles. He exhibited not only a willingness to allow the clinician to share in this activity, but a kind of insistence that she participate as he would pass the bottle of bubble blowing liquid to her and calmly wait until it was returned. Whenever he was engaged in producing bubbles there was a significant reduction in his stereotypic pattern of arm flapping. The only time it occurred during bubble blowing sessions was for the few moments he waited for the clinicianto return the bottle to him.

Because of his inefficiency in blowing bubbles, the clinician attempted to assess whether this was a basic lack of fine motor control related to this particular task, or an oral apraxia for blowing in general. Therefore, a game of blowing ping pong balls across the table was introduced. George did not seem to comprehend what was required of him to participate in this activity, although he delighted in chasing after the balls as they dropped from the table to return them to the clinician. In a further attempt to encourage efficient blowing, the clinician provided a kinesthetic model by blowing on the back of George's hand. Again, he did not understand the nature or purpose of the clinician's actions, but only responded as if the whole activity was uproariously funny.

Continuing the effort to expand the basis of interaction, the clinician introduced the family of hand puppets because of their animation potential. Although George readily followed the clinician's lead by putting a puppet on each hand, he did not comprehend that they were highly manipulative and only exhibited a giddy response.

In a gradual process of change, the focus of the clinician's communicative efforts had become almost exclusively nonverbal. George was especially alert to the clinician's facial expressions, the tempo of her bodily movements, and her direct presentation of expectations through gestures. As a part of this vigilance there was a steady increase in periods of sustained eye contact. He tended to follow the clinician's every movement. At this juncture in the therapy process, the clinician had come to recognize some of the subtleties of George's behavior. His facial expression, especially his eyes, revealed the degree of his comfort within the situation. Most frequently, he exhibited a look of apprehensive uncertainty which could be quickly dissipated by simply smiling at him. Similarly, the converse could precipitate a display of anxiety. The clinician's increasing awareness and sensitization to such phenomena profoundly effected the relationship. Whereas George had a history of maintaining maximal distance between himself and others, it was felt that significant progress was made during this month as the distance between George and the clinician slowly diminished. He came to allow the clinician to sit alongside of him and pat his hand or shoulder in gestures of reassurance, comfort, or praise. He continued to show marked responsiveness to the clinician's imitations of his behavior and delight in being able to do things together.

Within the growing relationship George began to show an ever-increasing need to win the clinician's approval and praise.

This was manifest from the moment he entered the room and particularly during periods of close proximity as he would search her face for some clue as to what was expected of him, exhibiting a readiness to perform presumably for the positive reinforcement which had been bountifully heaped upon him by the clinician. He seemed unable to perceive the reality of the permissiveness within the situation as he did not initiate any activity himself and constantly sought the clinician's leadership. Never quite certain as the appropriateness of his own responses, George seemed to be completely dependent upon the clinician's perceptions of reality. This behavior was poignantly manifest in a session when crayons and paper were introduced. He sat alternately eyeing the paper and the clinician, unable to proceed until the moment the clinician indicated, through word and gesture, that he might crayon if he wanted to. While the expectation that he might use this graphic medium projectively was not fulfilled, he nevertheless made a few indistinguishable chicken scratches on the paper. With each stroke of the crayon he would look towards the clinician as if to find reassurance that he was doing what was expected. A quality of desperation pervaded the entire atmosphere. Were it not for the fact that his scratchings were formless and defied interpretation it would have been easy to misconstrue his intensity and absorption in the task as that of an artist carefully scrutinizing his subject to be certain about his reproduction. In this atmosphere it became necessary for the clinician to constantly introduce variations in the use of the media, for George would perseveratively pursue an activity as long as positive reinforcement was forthcoming. At no time did he exhibit a truly independent attitude, seemingly incapable of generating his own variations. Accordingly, the clinician attempted to structure uses of the crayons and clay which would remain within the boundaries of possible success experiences for him. Evolving from these activities, a number of observations of George's visual perceptual functioning were made possible. Such a simple task as matching primary colored crayons to colored pieces of paper required multiple presentations with extensive gesture before George sufficiently comprehended what was expected of him. Although a capacity for color discrimination was ultimately determined, his performance throughout was fraught with repeated errors and no indication of a capacity for self-correction. Utilizing the long strips of clay which George would perseveratively roll out, the clinician demonstrated that geometric forms could be reproduced in clay by laying the strips over a square, a circle, and a triangle which she had drawn on paper. He was unable to copy this, laying the clay indiscriminately on the paper with no attempt to trace the geometric forms.

During this type of activity when George was absorbed in the immediate task, a marked diminution in his stereotypic behavior occurred. Thumb sucking was absent; however, he presented the substitutive pattern of sucking his tongue. Whenever he paused, even momentarily, he would resume the rocking of his head from side to side accompanied by arm flapping.

Paradoxical to this attentive behavior, a generalized pattern of distractibility was observed not only this month but over the entire course of therapy. He would suddenly cease whatever activity he might be engaged in and attend to such peripheral stimuli as the crying of a child in the play yard, footsteps in the hallway, or the minimal noise made by the tape recorder. During such unplanned auditory intervention, it was repeatedly demonstrated that George was able to localize sounds of moderate and low intensities.

In the final session of this month George exhibited explosive behavior which was in distinct contrast to his usual compliant, passive self. He arrived emitting gales of laughter, seemingly full of energy and vitality. While the precipitating circumstances were not discernible, this marked shift in mood was attributed to an outburst of his new found strength accompanying his adolescent development. Within moments, he managed to scatter the blocks about the room, spill the bottle of bubble blowing liquid, kick and heave BoBo about, forcefully throw the ball around, and loudly rattle the cover of the baseboard heating unit with vigorous kicks. The clinician had learned that George did not heed any verbal restrictions of his behavior regardless of the simplicity of their formation or the number of times that they were repeated. Knowing that only through gestures or physical manipulation was it possible to establish any limits, the clinician set about to contain George's ebullience. In the midst of this, George solidly hit the clinician. He seemed neither malicious nor angry but remained gleeful and entirely delighted in his show of strength. At times such as these, the clinician found that the most effective means of redirecting his energies was to provide him with a recreation of the first significant contact that they had had, manipulating the clay.

Third Month (21st through 31st session)

By comparison with the previous months, George's shifts in mood from one session to the next were more frequent and extreme. There were days when all of his behavior was fraught by apprehension. Every movement was executed with slow cautiousness and a deliberateness of control which was inappropriate for the particular performance. For example, when he sat down or reached for an object, it was done with a mechanical exactness. From the point of view of an observer his motility patterns were executed as if in slow motion photography. On the other hand in a subsequent session, he would move about vigorously and energetically with a sense of mischievous delight in whatever he might be doing. In some sessions his energies were entirely channelized into the pursuit of the singular activity of blowing bubbles. Whenever this activity was undertaken there was the continued expression of togetherness. Endless cascades of bubbles issued forth as they alternately dipped their bubble blowing sticks into the solution, again and again raising them to their lips to blow. George would sit transfixed, his eyes glued to the clinician, awaiting his turn. He continued to require some indication of approval, always looking toward the clinician with a facial expression which seemed to ask, "Is it all right?" The clinician's nod or hand gesture had come to suffice. During those moments when he awaited his turn, his stereotypic hand flapping pattern persisted but ceased immediately upon the execution of his own purposeful participation. A further manifestion of client-clinician interaction occurred when the clinician introduced variations of this activity such as recapturing a bubble on the end of the stick and offering to transfer it to George's stick. This, he readily accepted and would promptly make an attempt to return it. Despite the frequent occurrence of bubble blowing as an activity, George's skills did not appreciably improve. A similar deficit in fine motor skills, suggestive of an oral apraxia, was observed when whistles or balloons were introduced. He seemed not only unable to conceptualize the mechanical aspects of placing the whistle in the necessary position in his mouth in order to blow it, but he might also insert the wrong end or cover the aperture so that no air could escape. When the clinician correctly positioned it between his lips he readily accepted this manipulation. He would beam with delight and break into laughter when he was able to produce the trilling sound. With regard to the balloons, George found it impossible to inflate them as he did not properly position the neck of the balloon in his mouth. Repeated, but unsuccessful attempts to show him how to do it were made by setting a visual model. He became quickly frustrated and would hand the balloon to the clinician to be inflated. The clinician introduced the game of releasing the inflated balloon, thus allowing it to fly about the room propelled by its escaping air. George exuded sheer delight in the razzing flight of the balloon and would immediately retrieve it to return it to the clinician. Every effort was made to instruct him how to appropriately grasp the neck of the inflated balloon between his forefingers so that he could at least experience the act of letting it fly into the air. Although he accepted the clinician's repeated manipulations he was unable to integrate the instructions.

Unlike his inability to imitate fine motor acts, George had shown a proclivity for imitating the clinician's models of gross motor behavior. This month, increasing client-clinician interactions through direct imitation had evolved to the point that major portions of sessions were consumed in such activity. Many of the imitations were spontaneous. When these occurred the clinician would capitalize on his readiness to participate. It was found that George experienced inordinate difficulty for a fifteen year old boy in performing imitations of bodily movements. While he was able to copy simple movements like extending his arms to the front or to the side of his body, or folding his hands together, he became confused in imitating the placement of his hands on his head, stretching his arms over his head, and particularly in finger and hand games. In his attempts to place his hands on his head his confusion seemed to center about the location of his head in space and in relation to the rest of his body. His hands would fumble in space as he groped for the top of his head, invariably ending up by placing them behind his head or on his neck. In response to the clinician's model of extending her arms over her head while in a sitting position, George seemed constantly compelled to stand and elevate only one arm. In the task of extending individual digits from a clenched fist position he would try to copy but found it too difficult, being only able to flex all his fingers simultaneously. While certain deficits in motor development were thought to be the product of his lack of socialization, it was clear at this point in therapy that he was basically deficient. This was further substantiated by his inability to stand or hop on one foot, or to descend stairs with alternating feet without support. In a like manner, he showed profound retardation in climbing. In a task of climbing onto the bench and table which were of standard height, he awkwardly clung to the wall as he ascended, and descended by sliding down on his bottom.

It was not surprising to find gross deficits in fine motor control of the oral mechanism in the presence of his poor control of large muscle groups. In imitative games emphasizing tongue mobility, he was not able to copy even the simple extension of the tongue.

Evolving from these imitative activities, a variety of nonverbal interactions occurred which revealed additional information about George's perceptual functioning. Playing with the building blocks provided a natural situation affording opportunities to observe his ability to discriminate form through sorting and matching activities. After the clinician set out small piles, each containing identically shaped blocks, it was found that George was able to match forms by placing each block on the correct pile as the clinician handed it to him; however, when he had to sort blocks from a mixed pile he became thoroughly confused. No spontaneous constructions were ever produced; however, he was able to participate in the building of a tower when the clinician handed him one block at a time, exhibiting the typical exuberance of a preschool child in both anticipation and the actual knocking down of the tower.

Several attempts were made to have George copy simple geometric forms by reproducing them with a set of twelve inch long sticks. A profound disturbance in the abstract attitude was manifest in his perseveration of successful reproductions and in his tendency to concretize his performance. He was unable to copy from a model which was abstract in form and could not reproduce any of the forms from memory. Upon successfully copying a two stick design with the model present he continued to reproduce it in subsequent trials when other forms were introduced. He seemed unable to shift from his perseverative performance even with the clinician making definite shifts between each presentation. Throughout all of these activities, George's performance was marked by his usual apprehensive uncertainty, prolonged eye contact, and constant need for reassurance and praise.

In the relatively unstructured activity of finger painting George's productions were devoid of thematic content, representing only the tactile experiences of spreading the paints randomly on the paper. This did not change throughout the course of therapy. His approach to the finger paints was without inhibition, freely smearing them beyond the boundaries of the paper, covering the additional surface afforded by the table top, as well as the protective shirt which he was wearing. Consistent with his overattention to bits and pieces of material here, too, any lump of pasty semi-dry paint became the focus of his attention as he would become consumed in smoothing out any lumps he found in the finger paints. While not efficient, he was most eager to assist in the cleaning up operation, crudely and mechanically manipulating the sponge. It was as if he were unable to relate his scrubbing movements to the function of the sponge, that of absorbing the paints.

With the onset of cool, fall weather, observations with regard to self-help were made in reference to George's ability to handle his own clothing. He demonstrated that he had learned to manipulate the slide fastener on his jacket. In his spontaneous toileting he was able to fasten his trousers but experienced difficulty in rearranging his clothing, particularly the tucking in of his shirt and completing the closure of his trouser zipper. In only the most limited aspects of dressing was he able to follow verbal directions. He responded to only those requests which were highly conditioned such as, "Put on your coat," or, "Take off your coat." To less common request such as "Straighten out your collar," he responded only when repeated gestures were employed.

During this third month three events occurred which poignantly demonstrated the positive force which the therapy experience was having on George. Whereas he had been notoriously distant with people, he now began to initiate direct contact with others. At the end of one session upon returning to the play yard with the male clinician, George spontaneously reached out and hugged him about the neck. On another occasion in the play yard he sought out the female clinician, taking her by the hand and was most content to walk through the grounds pausing now and then to pick flowers. The third episode, and perhaps the most remarkable because of its unpredictability, occurred in the last meeting of this month. While a picture of a face was being drawn for George the clinician named each part. She touched both her own and George's face as the part was named. He not only allowed his face to be touched, but in the midst of this activity he attempted to orally form the words "nose," "mouth," and "eye," moving his lips as he studied the clinician's mouth. It was a soundless effort but one in which he clearly opened his mouth as if to say the word but seemed unable to volitionally control his articulators or to produce voice. His concentration and determination, which heretofore had not been manifest, were intense. The quality of his effort and ultimate failure were again highly suggestive of behavior usually found in persons with an oral apraxia.

Fourth Month (32nd through 42nd session)

At this point in the therapy process it had become clear that the relationship was limited in its potential growth due principally to George's impoverishment in the capacity to comprehend language and his total lack of verbal communication. Countless situations occurred naturally where the clinician would make a simple verbal request of George such as, "Give me the _______." This form of request in incidental testing had indicated that he was extremely limited in a noun vocabulary. If no gesture was used and he was exclusively dependent on verbal cues, he would attempt to comply with the request but his responses were fraught with errors. When he responded to the request, he would more often than not give some other object that the one asked for. His substitute responses were seen as indications of his willingness to comply but as the principal manifestation of his inability to order and make meaningful use of auditory stimuli.

Throughout the month, repeated presentations of selected objects were made. He was asked to pick out one object from a group which never exceeded three items. These included various groupings such as figurines of a mother, father, and boy, or a cow, pig, and horse. Also presented were either the actual objects or pictures of a comb, belt, shoe, knife, fork, spoon, cup, plate, and glass. When the request, "Give me the ________," was made with the extended hand gesture, George would not wait long enough to hear the name of the particular object but would reach out and either make a random selection or give all three objects to the clinician. After multiple repetitions of the combined verbal and gesture request, George learned to respond without the accompanying gesture. Because he continued to hand the clinician an object prior to hearing its name, she would gently restrain his hand until the complete direction was given. Despite this added control he continued to make substitute performances. When it became clear that he had no knowledge of the names of the objects, the clinician provided a preliminary naming phase. As each object was placed on the table its name was stated three or four times. Even with the selection limited to two objects, George's successes were so exceeded by his errors that they could only be attributed to chance. Under the conditions of immediate recall it appeared that his impairment was primarily in the area of symbolization. His visual discrimination of objects was demonstrated by his success in matching object to picture.

A consistency in the type of error he made in response to the auditory stimuli was also seen when he was asked to select objects according to color or form. A variety of identically shaped objects which were of assorted colors were used to assess his capacity to auditorily identify and visually discriminate color. In this case George showed no success whatsoever when he was asked to select a specific color. This was consistent with his inability to perform in other areas when he was solely dependent on auditory cues. Similarly, while he was slow in responding and used a trial and error approach he nonetheless was able to match colors.

A gross incongruity in George's language comprehension was manifest several times during the month. While he was unable to respond correctly to nouns presented in isolation he correctly and with alacrity responded to three short requests: "Let's go to the toilet," "Let's go to the bathroom and wash our hands," and, "Let's go to the bathroom and get a drink of water." These were stated only once in a soft suggestive manner rather than in a demanding way and were offered without gesture. His responses to these particular requests seemed to be the product of conditioning through years of repeated presentations. They were adequate stimuli for George, but the individual words contained within the requests were not recognized for their specific symbolic significance.

Apart from these rare direct responses to the clinician's verbalizations, the basis of interaction continued to be gesture communication and imitative exchanges. A most remarkable imitative effort occurred again this month when George attempted to copy movements of the oral musculature. The clinician had engaged him in games of imitating movements of all body parts and began to focus upon movements of the tongue. As he was unable to copy tongue movements on the basis of a visual model, the clinician provided an additional cue by touching his lips with her fingertips. This seemed to help him to copy the tongue extension but beyond this he was unable to lick his lips, elevate his tongue to his gum ridge, or press it against the interior wall of his cheek. His inability in this area of motor control called attention to the generalized flaccidity of his tongue. He had never been observed licking his lips or otherwise exhibiting volitional mastery of his oral musculature. Even his pattern of ingesting food appeared inefficient. These observations led to efforts to examine his ability to use his oral mechanism volitionally for phonation. The clinician reduced the complexity of the stimuli by producing the vowel sounds "ah," "ee," and "oh." In an entirely unexpected performance George struggled to reproduce the mouth movements needed to form these sounds. After much effort he achieved a crude approximation of the clinician's model, but was aphonic. The clinician added the tactile kinesthetic cue by having George feel the vibrations of her larynx while she was phonating. With no success in this effort, he was then encouraged to demonstrate volitional control of his oral mechanism through imitations of coughing and laughing. Despite his inability to imitatively perform these primitive oral functions, he would sustain his efforts with such intensity of purpose that the clinician, in order to control the frustration generated by consistent failure, would shift the focus to a different activity. George's only success in the volitional use of his oral mechanism was experienced in eating, thumb sucking, biting, and the blowing of bubbles or a whistle. Unlike the previous months he had come to recognize the correct placement of the whistle in his mouth and took great pleasure in marching about the room, forcefully blowing it. However, in this activity the whistle was held so loosely in his mouth that it was often ejected by the force of his blowing.

Some part of every session continued to be spent using the graphic media of crayons and finger paints. In the continued absence of any productions with crayons, the clinician introduced a sequence of activities aimed at helping George to move beyond his perseverative nonrepresentational scratchings. So that he could experience the free movement of the crayon across the surface of the paper, the clinician placed her hand over George's and guided it in a series of sweeping circular motions. He seemed fully acceptant of this gentle manipulation and expressed his pleasure, laughing, as together their hands moved back and forth across the paper. At the very moment the clinician ceased to guide his hand, George would stop the action and resume his scratchings. Using a similar approach the clinician guided him in tracing vertical and horizontal lines and "x's" with the hope that he might eventually reproduce such simple linear forms. No success with this approach was immediately evident.

Although most aspects of George's behavior had become highly predictable, a few new patterns began to emerge during this month. In the midst of some activities and in the absence of any specific stimuli, he would suddenly get up from the bench, turn completely about, reseat himself, and resume the activity as if nothing had occurred. No explanation for such behavior could be ascertained.

George spent many daytime hours in a bedroom a few steps away from the therapy room. On several occasions during this month he spontaneously and independently came to the therapy room door, furtively looked in, discovered the research staff eating their lunch, and bounded back down the hall to his bedroom. With this manifestation of curiosity the clinician began the practice of inviting him into the room whenever he appeared at the door. He seemed fascinated and quite content to sit at the table watching the staff finish their lunches. In an effort to provide him with a purposeful outlet for his energies, the clinicians introduced the task of carrying a lunch tray back to the kitchen. This meant travelling through the hallway and down a flight of stairs. For George this was a journey fraught with peril as he was unable to see his feet because of the tray. Only with the steadying hand of one of the adults to help balance the tray every step of the way, was it possible for him to reach the kitchen without dumping the contents of the tray. His usual one step at a time pattern of descending stairs was the most difficult portion of the trip. Upon reaching the kitchen and having deposited the tray, he received copious amounts of praise to which he responded with glowing smiles.

Fifth Month (43rd through 55th session)

This month was replete with additional displays of paradoxical behavior. It became increasingly more difficult to anticipate George's behavior from session to session or within any particular session. The precipitating stimuli which might account for his variability remained obscure because of the difficulty of assessing the nature of his experiences immediately prior to coming to therapy. He might sit in quiet concentration absorbed in a simplified task but would intermittently be overcome with enthusiastic boisterousness. At other times he would spend an entire session consumed in "horse play." It appeared that he had become increasingly less inhibited as he threw himself whole-heartedly into a series of actions, each requiring that limits be imposed. Because of his size, strength, and lack of impulse control, his potential for harming himself or the clinician had become a reality as his docility diminished. Occasionally, he would forcefully but playfully push and shove the clinician about the room. Whereas in previous months a frown or other gently expressed negative reaction to his behavior would have elicited his immediate withdrawal, now the clinician found it had become necessary to physically restrain him. It was as if he were making an effort to increase the extent of body contact with the clinician by repeatedly testing the limits. He might begin by knocking over the bench, then move on to trying to overturn the table, or heave the music box across the room. Part of this increased expansiveness were vigorously aggressive attacks upon the puncho toy. He would give BoBo a sound kick sending it sailing across the room, or fling himself against BoBo and both would tumble to the floor. Whenever he engaged in such volatile play he would become convulsed in unrestrained laughter rather than emit the usually expected vocal expressions of anger or aggression.

Concurrent with the expressions of these vast changes in mood, new patterns of stereotypic behavior were observed with increasing frequency. In an entirely unpredictable fashion, he would suddenly cease all activity and sit immobilized, staring off into space. This would last but five or six seconds. A variety of patterned body movements were also observed. These included a sudden contraction of his abdominal muscles similar to a tic, a writhing movement of his entire torso which appeared as if he were trying to scratch his back, an arching of his back accompanied by the tossing of his head backwards, infantile swimming movements executed while lying prone on the floor, and the biting of the back of his hand.

The usual atmosphere of permissiveness became increasingly difficult to maintain as George's behavior became more fragmented and diffuse. Although there were a few sessions in which he returned to his placid self, he had an ever-increasing need for physical activity which exceeded the coping strength and energy which the clinician had available. It was therefore decided that whenever George exhibited his ebullient self the male clinician would assist by providing him with a release of physical energy through rough and tumble body contact. Here, too, he manifest a motor disability not only reflecting his lack of exposure but also his basic inability to integrate verbal and gesture communication.

For example, when the male clinician introduced forward or backward sommersaults it was necessary to guide George by positioning his body through each step. Although he showed his enjoyment by repositioning himself on the floor and indicating his wish to continue by raising his feet, he was unable to proceed independently. Another favorite activity was seen in George's sustained interest in the simple game of alternately piling hands one atop the other. With both clinicians participating they would build a tower of hands. Each of them in turn would pull his hand from the bottom of the stack and move to the top of the pile. Although George became thoroughly engrossed in the activity it was impossible for him to recognize his turn or to locate his own hand within the pile. Because he often pulled his hand from amidst the pile, one of the clinicians held it in place until his turn arrived. When it was his turn to place his hand on the top of the pile the clinician would indicate this by nodding affirmatively and releasing his hand.

On those occasions when George arrived for therapy in a relative state of quiescence it was possible to engage him in task oriented activities. An Erector Set was introduced in the hope that he could participate in the building of simple structures. The clinician would organize the parts, hold them together, set a bolt in place at the connecting point, hand George a nut, and through gesture indicate to him that he could complete the connection. At first he attempted to force the nut in place by pressing it against the bolt. This type of response was also noted when he would attempt to replace a button which had accidently been torn from his clothing. As with the nuts, he seemed to feel that by simply pressing the button against the fabric, it would become attached. After numerous repetitions, George was able to copy the clinician's demonstration and began to use the needed rotary movements. Although awkward and discoordinated, each time he managed to affix a nut to a bolt he exhibited pleasure in his accomplishment.

On those days when he was relatively calm and quiet, it was possible to introduce the Playskool shoe lace trainer as an aid in helping George learn to tie his own shoes, the one dressing activity in which he was still completely dependent. It was known that he had been repeatedly exposed to this educational toy but displayed no prior learning. At first it was not only necessary for the clinician to start the lacing in the first two holes but also to hand him the appropriate lace and cover inappropriate holes when he attempted to incorrectly insert the lace. This structured presentation continued through to the final month of therapy with George finally accomplishing the independent lacing of the trainer and forming the overhand knot; however, he did not master tying the bow. When his own or the clinician's unlaced shoes were substituted, his performance was equal to that displayed on the shoe lace trainer.

Other learning which took place this month was seen with crayons when George finally came to imitate the circular and linear movements modelled by the clinician. These scribblings were a significant improvement over his heretofore limited chicken scratches.

Further examples of language comprehension deficits were observed during sessions when the clinician sought to have George identify facial parts by touching them as they were named. Although he was unable to respond to the verbal stimuli, he readily attempted to locate them by imitating the clinician's gesture models. When reaching for his eye, ear, nose, hair, or mouth he would frequently miss his mark by several inches and end up by touching only the general area of that particular part. The clinician pursued this imitative activity whenever George was calm and in an attentive mood, always incorporating the name of the facial part. While some improvement in locating his facial parts occurred, no gains were made in his ability to respond to the auditory stimuli.

Some of these imitative exchanges took place before the one-way vision mirror; however, no differences in imitative ability were observed when the mirror image was being copied. During these activities, it was clear that he recognized the function of mirrors. A further demonstration was seen when he spontaneously went to the mirror over the bathroom sink to examine a sore on the tip of his tongue.

Sixth Month (56th through 63rd session)

George's interactions with the clinician had steadily increased in both quality and quantity. Avoidance or withdrawal behavior had become almost non-existent. Most sessions were absorbed in continuous activity. As George's attention span fluctuated from session to session, it was necessary that the clinician be ready to move rapidly from one activity to another. While the interpersonal relationship had flourished, no significant change in George's ability to deal with his perceptual world had occurred spontaneously.

The clinician's imitation of George's thumb sucking provided some rare moments of humor. When she actually copied his thumb sucking he would quickly remove his sodden digit from his mouth and, from time to time, dry it off by wiping it on the clinician's clothing. This was accompanied by much giggling and laughter especially when the clinician returned the gesture. Several other such exchanges occurred during this final month which further enhanced the atmosphere of mutual acceptance. A series of interactions particularly communicative of mutual trust occurred in relation to the clinician's continuing efforts to establish the extent of George's volitional control of his oral mechanism. Efforts to imitate oral movements had affirmed the presence of an oral apraxia. Attempts to have him reproduce mouth movements needed for blowing, lip smacking, or tongue extensions led to the actual touching of each other's mouths. At first George seemed reticent about placing his fingers near the clinician's mouth as if he were apprehensive about the possibility of being bitten. Quickly overcoming his fear, he began to explore the clinician's lips and teeth with his fingers. Following the usual pattern of imitating his motor behavior, the clinician did the same. Such contacts furthered George's feeling of safety in the relationship; however, no significant change in the volitional control of his peripheral oral mechanism was actually accomplished, nor did he manage to produce a single phoneme.

Unlike the boy who appeared so thoroughly terrorized when he happened to be in close proximity to other persons, George maintained direct contact with the clinician. One expression of this was seen several times this month when he came within inches of pressing his cheek against the clinician's face in an attempt to brush his face against a wisp of the clinician's hair. An example of his recognition of the clinician as a person occurred when he spontaneously and repeatedly brought her a glass of water each time he went to the bathroom for a drink.

As the preceding months of therapy had been replete with examples of George's problems in perceptual areas, continuing observations were made in structured and unstructured situations. Marked auditory dysfunction had been noted with regard to language. Accordingly, it was of particular interest to observe his inability to integrate the nonverbal music stimuli emanating from the jack-in-the-box. George seemed quite content to simply crank its handle but gave no evidence that he recognized the point in the tune when the jack would pop out of the box. He would continue to crank, making no effort to replace the jack or to repeat the process. Even though he had had countless practice sessions with the musical jack-in-the-box, his only performance was the perseverative cranking.

George's capacity for sustained attention to the clinician's activities made it possible to structure brief experimental testing sessions to further examine his capacity to deal with nonverbal language stimuli. Specific testing of his ability to identify common objects through the pantomiming of their function was attempted. Such items as a glass, comb, pencil, spoon, etc., were placed before him on the table. The particular action most commonly associated with the object was mimed and through the extended hand gesture of "give me" it was expected that he would then select the appropriate object. After repeated presentations in several different sessions he gave no indication of comprehending any gesture other than "give me." All that he was able to do was arbitrarily pick up one or more of the items and hand them to the clinician.

In another series of structured testing, attempts were made to establish George's recognition of the names of common objects and colors. Motivation for his participation was achieved easily by capitalizing upon his strong desire for sweets. First, George was shown a piece of candy being placed under a cup which was followed by a gesture indicating that he could get it. In this he succeeded. The subsequent presentations involved common objects and variously colored cups. When George was prevented from seeing where the candy was placed and was told which item it had been placed in or under by its name or color, he did not succeed but only made a random search for each of the trial presentations. No ability to utilize the simplest of language stimuli was demonstrated.

Periodically throughout this month George continued to exhibit the peculiar twisting, writhing movements which had first been observed in the fifth month. In addition to the clinician's observations, other members of Seaview's staff reported that they had also seen this unusual behavior. These movements were observed not only when George was standing or pacing about, but also when he was lying down. In either the supine or prone position he would convulsively thrash about.

No session throughout the entire course of therapy was more startling than one during this month in which this behavior was so intense that he gave every appearance of having a seizure. While on the way to the therapy room he exhibited snake-like writhing movements with spastic jerking of his back, head, and arms. His stereotypic pattern of biting the back of his hand was also present. He had nicked the back of his hand and his lower lip, both of which were bleeding. In the hallway within a few feet of the therapy room door, he suddenly threw himself against the wall, writhing as if he were desperately trying to knock off an irritating object which was stuck to his back. Amidst this display of contortions, he emitted wailing vocalizations such as might be produced by an injured animal. Unable to determine the precise nature of his problem, the clinician encouraged him to proceed to the therapy room. His wailings, combined with tears, suggested that he might be experiencing pain possibly associated with his chronic constipation. Accordingly, he was led to the toilet. As he sat there he continued to wail pitifully and flail his arms about in aimless athetoid-like movements. After a few unsuccessful minutes on the toilet, he was led back to the therapy room where he sat on the bench. As there was no diminution of this bizarre behavior, it was felt that until he could be seen by a physician it would be safest to take him to his bedroom where he could lie down. Within a half hour period, the convulsive behavior dissipated. Because of subsequent episodes of these unexplained attacks, he was seen by the local pediatrician who prescribed Mysoline, an anti-convulsant.

With only two sessions remaining in this final month, the clinician returned to the clay and bubble blowing activities which had been so useful in initially establishing the relationship.

Case Summary

Medical History

The paucity of available medical data about George was exemplified by his birth record which simply noted his weight and that he was "normal" at birth.

As his mother returned to her law practice within a few weeks of his birth, his care was principally in the hands of a governess. According to his mother, his development was normal with the exception of language and speech until he was two and a half years old. With the advent of intense head banging, tempter tantrums, and because of his lack of speech development, his parents sought help at a children's psychiatric center.

Previous Therapy

It was not possible to obtain a report from the psychiatric center; however, it was known that psychotherapy was provided both George and his parents for five years and that his treatment as an atypical child was terminated with a recommendation for his institutionalization.

Residency at Seaview

When George was eight years and eight months old he was admitted to Seaview as a psychotic child with no known neurological, visual, or auditory deficits. Six and a half years of his residency were studied and revealed that he was an essentially silent boy who produced only incomprehensible noises and that these were rare.

In the activities of daily living he functioned below the level of a normal preschool aged child. Disturbed patterns of eating, sleeping, and toileting were a regular part of his experience. Endless hours were spent in isolated, stereotypic activity, principally in rigidly patterned play in a sand box, aimless pacing, thumb sucking, arm waving, and hand flapping. Unless provoked to anger, he maintained an exceptionally passive attitude. His most common outbursts were related to his inability to verbally express himself for even the most basic needs.

George did not seem to profit from the program at Seaview. His condition remained static with the only observable progress being in the area of physical maturation. Pubescence occurred with no alteration in his usual infantile level of functioning with the exception of the discovery of his penis and masturbation.. During the latter part of the research staff's observational activities, George's medication was changed from a tranquilizer to an anti-convulsant because of the advent of new behavior suggestive of a convulsive disorder. This was not confirmed by laboratory studies and no medical reports were available evaluating his condition.

Experimental Therapy

Observations and impressions gained during the sixty-three sessions of experimental therapy were as follows:

Nature of the Relationship

Within the first few weeks of therapy George shifted from avoidance behavior to steadily increasing displays of acceptance which culminated in an active seeking of direct contact with the clinician.

Under the nondirective structure and without the clinician's active intervention, Goerge would remain fixated upon his stereotypic behavior. Despite the absence of any verbal communication a relationship was formed by utilizing the primitive modes of nonverbal communication.

Most of the interactions occurred at the level of imitative behavior and in response to copious displays of acceptance and approval. An atmosphere of safety was readily communicated by the clinician's use of a well-modulated voice and by minimizing any quick or sudden movements. Within the relationship, George was free to exhibit behavior which revealed the nature of his perceptual disturbances.

Perceptual Processes

George's responses which were observed in both structured and unstructured situations were outlined as follows:

Olfactory.--George did not manifest aberrant use of this modality.

Gustatory.--He did not exhibit any unusual patterns in this area.

Tactile-kinesthetic.--No material seemed to fascinate him more than sand. He enjoyed not only handling it but spilling it over any exposed part of his body or limbs. The delicate way that he manipulated any object seemed to be an extension of the manner in which he would spill sand through his fingers. The satisfaction gained from the generalized stimulation he received from sand seemed to function in relationship to sensory deprivation in other modalities rather than as a means of perceiving reality.

Response to Pain.--When George experienced any physical discomfort he was able to localize the pain but failed to seek help or comfort from other persons.

Visual.--The stimulation he received from the periphery of his visual field by flapping his hands could be assigned as a unique expression of a visual field defect. His general acuity was not suspect because of his repeatedly demonstrated capacity to locate minutiae, to discriminate color, and to match simple geometric forms.

Auditory.--Numerous observations of his ability to localize auditory stimuli of minimal intensity satisfied the research staff that his auditory acuity as such was not suspect.

Motor Behavior

George rarely engaged in any socially meaningful activity. His day was spent in pacing, arm flapping, thumb sucking, and sand sifting. He seemed to be unable to initiate any activity. Thus, most of his time was spent waiting--waiting for meals and waiting for bedtime.

Deficiencies in gross and fine motor skills were noted throughout. He had an awkward gait, walked with his feet prominently everted, rarely ran, and descended stairs one step at a time.

Vestibular Functioning.--No disturbances in this area were noted.

Linguistic Functioning

Receptive.--George's reliance upon nonverbal communication was pronounced. He studied people's facial expressions, watched their eyes and any movement which might provide him with a clue as to what was expected of him. When spoken to without gesture or expressions of affect, he was unable to react appropriately except for a few highly conditioned phrases. For these few phrases he responded only in the behavioral sense but the words did not seem to have meaning for him in the sense of representational symbolism. When the language stimuli called for a specific response he either gave no response or substituted responses which were erroneous.

Expressive.--An examination of his peripheral oral mechanism revealed a pronounced malocclusion, the product of years of thumb sucking and an oral apraxia in which he was severely limited in the volitional control of his oral musculature.

Paroxysms of laughter and giggles accounted for the majority of his vocalizations. Otherwise, he was more often than not soundless. His expressive efforts were almost nonexistent. His maximum expression of a need was a crude, hand waving gesture which usually defied interpretation. It was possible to grossly determine his mood through inference made from the total configuration of his behavior.

Time and Spatial Orientation

George seemed to need constant reassurance of his position in space. The most common demonstration of this was his endless touching and tapping of the walls as he moved about any of the hallways and particularly on stairways. His need to be in the sand box when in the open space of the play yard also seemed to reflect his problem in establishing boundaries.

He seemed to recognize the sequential order of daily events but showed no other recognition of time concepts.

Reaction Time

So much of George's energies were absorbed in a defensive vigil it was not remarkable that he was very quick to react to any threatening stimuli. He invariably responded rapidly to most stimuli, but not necessarily appropriately.

Learning

Attention.--Perseverations were noted in every dimension of his behavior so that learning was impaired. He was unable to change the focus of his attention without the external stimulus provided by the clinician. His overattention to specific detail and minutiae impeded the development of the ability to synthesize separate elements into a meaningful gestalt.

Imitation.--While not especially efficient in imitating the motor behavior of his clinician, he nevertheless made persistent efforts to copy. He had great difficulty copying a model or in any such activity which required an abstract attitude. He was unable to reproduce simple geometric designs. His best level of performance was in reproducing linear and circular movements with crayons. While he made repeated efforts to imitate, he seemed unable to monitor his own performances and had to rely on the clinician's responses to determine their correctness.

Memory.--Memory functions were markedly depressed for new learning. Countless repetitions of the lowest level tasks eventually became integrated.

Problem Solving.--As there was so little identifiable goal directed behavior and as he rarely asserted himself, it was not possible to fully assess his problem solving ability. His only means of getting what he wanted seemed to be by creating a disturbance. He did not have any efficient means of communicating his wants and was at the mercy of the abilities of those in charge of his care to interpret his nonverbal communications. For the most part, he was not successful and would abandon his goal.

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Case History of the Twins, Gene and Joel

Date of Birth: 12/27/47

Family History

The following information was obtained through interviews with the parents. The twins' father, a physician, was born in France where he received his medical training. Much of his professional life had been spent in Southeast Asia where he met his second wife. He had achieved a position of prominence in his medical specialty.

He had had four normal children in his first marriage, all of whom were over the age of eighteen and were living independently when the twins were born.

The children's mother was born in India. As a child her family had moved to Saigon, French Indo-China, now South Vietnam, where she received her education. Her father was a successful business man with a variety of holdings in the shipping industry. While her youth was spent in an economically privileged environment, her early twenties were fraught with the problem of survival during World War II. It was necessary for her to flee from the Japanese when they overran Southeast Asia. Eventually, she became a code clerk with a British Intelligence mission operating in the China-Burma-India theater. The intelligence group she worked with was led by the man who was to become her husband. It was shortly after World War II that they immigrated to the United States where the twins were born.

At the time of the twins' births their father was fifty-one and their mother twenty-seven years old.

Birth Record

The hospital report did not indicate any information with regard to the nature of the pregnancy. It was noted, however, that the mother had Paget's disease since birth. The twins were born three weeks prematurely. An episiotomy was performed and low forceps were used. There was no information regarding anesthesia.

Joel, the first twin, was born after the spontaneous rupture of the membrane. The presentation was vertex with a position rotation from right occipt posterior to left occipt anterior. His general condition was described as good and his weight was recorded as five pounds, thirteen ounces.

Gene was born following the artificial rupture of the membrane. The presentation was vertex and the position right occipt anterior. His general condition was also described as good. A triangular naevus in the mid-point of his back was noted. His birth weight was five pounds, nine ounces.

There had been one placenta and two sacs. No postpartum complications were reported.

Information received from the parents supplemented the hospital's records. They reported that the anesthetic administered was Ether and that although the twins seemed normal they were routinely placed in an incubator. Although their mother returned home after twelve days, the twins remained in the hospital for an additional two weeks. It was felt that the mother needed to gather her energies for the task of caring for twin boys.

Infancy (First-Second Years)

Both boys were bottle fed on a schedule which their mother was not apt to deviate from by more than fifteen minutes. At ten months Joel was weaned to a cup. His brother followed within a few weeks.

In most respects their developmental progress parallelled one another. They sat without support between the fifth and sixth months, walked with support at eleven months, and walked independently at twelve months.

At eighteen months they had not produced any sounds which were meaningful in the communicative sense; however, they did vocalize reproducing tunes which their parents sung or which they heard from radios and record players. This attention to musical stimuli seemed to satisfy their parents that the children were not deaf.

The parents became increasingly perplexed by the twins' lack of social development. The boys had played together briefly when they were nine months old, but following Joel's frequent attacks on Gene, they ceased to interact and remained indifferent to one another. The parents recalled that neither of the boys had been cuddly as infants and that they had failed to use the common infant gesture of extended arms expressing a desire to be picked up. It was the absence of responsiveness to adults and the beginning of bizarre behavior that alarmed their parents.

Although both boys were most agile, displaying no observable problem in motor behavior, there was universal ignoral of their parents' verbalizations which suggested to them that something was profoundly wrong with their children. It seemed impossible to the parents that the children did not understand when they spoke to them. Yet, the question was considered. Both parents were multi-lingual but spoke only French to the children.

A pediatrician who maintained offices in the same building as the family, advised that they should not worry, that the twins were fine, and would develop normally. However, at eighteen months, their father sought psychiatric advice. It was thought that the twins' problems could be a manifestation of jealousy and, therefore, they should be separated. This was done. One of the boys spent the day in the care of a woman who was subsequently described as, "ignorant, rejecting, and rigid."

The twins manifest persistent rhythmic rocking and/or head banging which the parents viewed as a most disconcerting aspect of their behavior. They did not play with toys in any but the most compulsive fashion, never in appropriate ways. Joel had an unusual fascination for lights. Watching for the lights of passing cars in the evening occupied many of his hours. When they passed, he would scream. Operating light switches with perseverative repetitiveness was also seen. Gene spent hours drawing series of lines on any flat surface. Both boys maintained an extraordinary need for sameness, rigidly adhering to whatever activity pattern they engaged in.

Feeding became an extremely difficult task with Joel as he continuously sucked his thumb. Cereal had to be slipped into his mouth without disturbing his thumb. Similarly, Gene accepted only infant foods.

The following was the parents' description of the boys at age two:

> "Joel has as good a physical development as his brother. He started walking two to three weeks later than his brother but is now more skillful in running, climbing, walking up and down stairs, etc. His is less advanced psychologically. He has just begun to show interest in blocks and pictures. Does not build towers, does not play with crayons, does not plug pegs in holes, but he turns the pages of a magazine although very clumsily. He is quite strong willed, adores walking and riding in a car, and takes his father or mother by the hand dragging them towards the door and then out into the garden to the car whenever he wants to go out. He has his personal interests and looks intently at a small object, turning it around in his fingers, trying to understand its meaning; but he never does that with anything which is handed to him. He discovers and chooses his own interests. He enjoys music enormously, literally dancing on his feet when the radio is on, crying when it is turned off, and dragging his parents to the set when he wishes it turned on. As far as food is concerned, he is worse, if anything, than his brother. He feeds solely on two types of soup and on strained fruit. He very definitely refuses to even try anything else and even shows more disgust than his brother when anything he does not like is smuggled into his food. When he was fourteen months old he once ate a piece of bread and chewed it, but he has absolutely refused to repeat this action ever since. At ten months he used to hold his bottle even better than his brother, but he now does not try to hold his cup and does not drink if it is not held for him. His speech is very much like his brother's--sounds but no words of any meaning."

> "Gene's physical development has been perfectly normal. He started walking at twelve months, runs with liveliness, climbs on the table, in and out of his crib with great skill, walks up and down stairs alone, and is very well oriented in the house. He builds easily a tower of three blocks, enjoys putting round pegs in round holes which he does without difficulty, uses crayons and watches the strokes with amusement. He enjoys music, walks, has a sense of humor shown by the fact that he takes his father's hat, puts it on his own head and then climbs on his parents' bed where he knows he can look at himself in the mirror and laughs when he finally sees his own image. But he shows two signs of retardation, as follows:

> 1) He does not eat anything but soft food. His nutritional requirements have been kept up by smuggling raw eggs and Swiss meats into his soup, but he shows disgust and refuses the next spoonful whenever a little piece of solid meat or bread is mixed with it. He waits in certain cases until he has enough of them and spits them all out at a time having, however, swallowed the fluid part of the mixture. We feel that he would positively let himself starve rather than eat anything which he does not like.
> 2) He does not utter a word and does not show any tendency to make any progress in that direction. He has no jargon and does not make his own little sounds for definite objects. When he is hungry he drags one of his parents by the hand towards the high chair where he is usually fed. He does not ask for bowel movements and continues to wet himself in spite of all efforts. However, he utters cries and yells and formulates vowels and consonants, but they have no correlation whatsoever with any action or object. There is no doubt that his hearing is perfect. French is spoken between the parents and to them; however, they hear English spoken by other people who come to visit the house, especially an occasional baby sitter."

Third Year

A diagnosis of early infantile autism was made when the twins were three years old by a renowned child psychiatrist who referred the family for treatment to the outpatient clinic of a psychiatric service in a major urban institution. They were seen for ten months on a weekly basis by two separate therapists while the parents were seen in the social service department.

Psychiatric Assessment

The following report was the result of the psychiatric findings:

> "The twins were born after eight months of a normal pregnancy and delivered by forceps. They were formula fed on a rigid schedule. Motor development was normal. Gene was said to have never cried except when hungry. Joel was more active, having tantrums. Around nine months of age the twins played together. Until one year old they were cared for entirely by their mother. When they reached eighteeen months, the parents, especially the father, felt that they were not developing normally. They did not speak, stopped playing together,

ignored other children, and did not understand toilet training. Later they developed the habit of rocking and banging their heads for hours. Sleep became poor. Both were described as liking music and responsive to it. A psychiatrist was consulted at age two and three who advised more efforts at training and more separation from one another.

"At the time of referral the children were completely separated during the daytime--one staying at home, the other being cared for by a woman outside of the home. There was no definite arrangement as to who was cared for by whom. Gene was described as being more aggressive, more babyish, closer to mother; Joel as being more sensitive, closer to father, indifferent to his brother. When first seen, Gene, a sturdy healthy looking child, had the expression of a five to six month old infant. He left his mother without any difficulty and made no contact with the therapist. His play consisted entirely in making patterns on the floor with colored crayons or scratching them on the floor and rocking. When his brother was brought into the playroom by his therapist, he paid no attention to him. This behavior continued for months with very little variation. At times, for a short while, Gene would seek contact with his therapist, wanting to be held like a baby most of the time. However, he used the therapist as a means of getting something or somewhere. A move to a new house with more separation from the mother brought about increased withdrawal and a throwing of objects--the signs of anger. This subsided and there was no reaction to the therapist's absence on vacation. In the fall Gene showed increasing contact and much infant-like behavior though he was eating poorly. Shortly after this the parents started debating changes in their mode and plan of living, including moving to Africa, to Indo-China, to France, or placing the children in a treatment center. Gene began to show increasing anxiety, unhappiness, withdrawal, and rocking during these sessions. . . .

"Joel was equally withdrawn, but showed more separation anxiety than Gene. His main interests were lamps and he would handle other toys as if they were lamps. As he sang spontaneously, his therapist frequently took him to a piano and played for him. Joel was very receptive to this and it seemed to foster contact with the therapist. Aside from lamps, Joel's only interest was strings. Occasionally he would want to be treated like an infant. As with his brother, anxiety increased and responsiveness decreased when changes were made or planned towards the end of treatment.

"Both children were examined by a pediatrician once with negative results. No electroencephalographic or laboratory studies were done. It was not possible to administer psychological tests. Our diagnosis for both children was infantile autism."

Fourth Through Sixth Years

Treatment ended abruptly when the family moved as the children were accepted by a psychiatric clinic which specialized in treating preschool children with atypical development. Unfortunately, no report of the three years of treatment at this center was available. The parents reported that the twins were seen daily for treatment in the clinic's nursery school as well as individually by child analysts. Concurrently, their mother received treatment by a psychoanalyst and their father was seen by the chief social worker. Institutionalization was recommended when the clinic terminated treatment.

Dissatisfied with the programs of the limited facilities available for residential care of "emotionally disturbed" children, the twins' parents, together with a few other parents who found themselves in a similar situation, organized an institution. It was under these circumstances that Seaview came into being.

Seventh Through Fourteenth Years

Residency at Seaview

When the twins were seven and a half years old, their father arranged for electroencephalographic studies to be done at a state psychiatric facility.

Electroencephalographic Studies

> "Each child was given 100 mg. IM of Thorazine one hour before the EEG procedure. The children were still very restless; therefore, Scopolamine, grains 1/20 sc. was given each child fifteen minutes before the EEG was started.
>
> "Gene--The EEG contains many high amplitude, 2 to 4 per second slow waves mixed with runs of low voltage fast cycles which are consistent with sleep. During the period of

recording, many 14 and 6 per second positive spikes are elicited on the right hemisphere (right anterior temporal, mid temporal, parietal, and occipital). Occasionally these spikes radiate to the left parietal and occipital areas. A few short runs of medium amplitude, 20 to 25 per second, fast cycles are noted. They appear from the left temporal anterior only, and are probably a result of the Scopolamine.

"Conclusion.--This is an abnormal EEG because of the numerous 14 and 6 per second positive spikes elicited. They are lateralized to the right hemisphere and are most prominent from the right occipital and right mid temporal areas. This tracing contains many more spike discharges than the tracing of Joel and appears more abnormal."

"Joel--The background frequency is high amplitude, irregular 2 to 4 per second slow waves, mixed with runs of low voltage fast cycles. On six occasions 14 and 6 per second positive spikes are elicited from the left hemisphere (left temporal, anterior temporal, mid parietal, and occipital). There is some radiation of these spikes to the left parietal and occipital.

"A few short runs of 20 to 25 per second, medium amplitude, fast cycles are noted. They appear only from the right anterior temporal and are most likely a result of the Scopolamine.

"Conclusion.--Mildly abnormal EEG because of the 14 and 6 per second positive spikes elicited. They are lateralized to the left hemisphere and are most prominent from the left mid temporal and left occipital areas."

". . . We know very little about the effect of Thorazine and Scopolamine on the EEG's of children. However, there seems to be no question that there is lateralized difficulty in the EEG's of both boys, and strangely the abnormality is more marked in the left hemisphere of Joel and in the right hemisphere of Gene. If the children are identical, this is indeed odd. Another thing to be noted is that the dysrhythmia for Gene seems to be greater than that for Joel. The whole thing argues for some curious kind of brain damage. We see many such cases where there is a strongly suggestive or definite history of brain damage. . . ."

The following outline of Joel and Gene's behavior in the milieu of Seaview was compiled from direct observations of the research staff and an examination of the school records covering a period of seven years of their residency. (7 - 14:1)

Activities of Daily Living

Eating.--Both boys preferred to use their fingers rather than utensils; however, with appropriate and persistent prodding they eventually came to use a fork or spoon. They would invariably assume a primitive squatting posture on the bench at the dining room table. Only when the adult in charge of their care insisted that they assume a regular sitting posture, would they reluctantly comply.

Impulse control was never demonstrated. Any food that they wanted was grabbed from the plates of other children and devoured. Several times during a meal, they would leap from their benches and run amuck in the dining room. Joel was especially prone to this and had to be fed in isolation or with only one other child present. At times, he became so volatile that it was necessary to remove him from the dining room. He terminated most of his meals by sweeping his dishes to the floor.

Both boys exhibited an indiscriminate pattern of mouthing, chewing, and ingesting many nonfood items. They had a preference for stringy, fibrous material and would, accordingly, spend hours chewing on bits and pieces of string, rags, grass, or wood.

Sleeping.--A bubble bath ritual preceded bedtime for both the boys. When this pattern was broken, rages were precipitated. Joel slept in a room by himself with the door locked. He was prone to shredding his pajamas, blankets, sheets, and picking apart his mattress. At the age of twelve, he was capable of ripping a strong woolen blanket to shreds. After destroying countless mattresses, a special canvas cover was constructed to completely encase his bed. Over the years his nighttime rocking became so vigorous that a special bed had to be constructed.

In order to get to sleep both boys would assume a kneeling posture and rock back and forth on their haunches. Often, this was accompanied by thumb sucking. Gene was observed occasionally rocking from side to side. He was provided with a camper's sleeping bag and would fall asleep completely encased in his cocoon. He, too, had his own room which had to be locked.

It was not uncommon for them to wake during the early hours of the morning, creating such a disturbance that they would wake everyone in the building. Both boys were prone to nighttime bowel movements and would be found covered with feces. Because of their destructiveness and the smearing of their feces, their rooms were barren except for their beds.

Toileting.--Apart from being occasionally "caught" by frequent toileting, it could not be said that either of the twins were toilet trained. When placed on the toilet they preferred to sit on their haunches in the manner seen among primitive people. Some limited conditioning had taken place so that when they were led to a toilet they might participate only to the extent that they would pull down their trousers. While squatting with their feet on the toilet seat, they would explore and manipulate their genitalia.

Dressing.--Constant supervision was needed when putting on or taking off their clothing. Over the years when a worker who had the rehabilitative self-help philosophy was in charge of their care, they demonstrated the capacity to manage their own clothing; however, such personnel were rare. It was more often than not the case that they would rely on others when dressing.

It was not until the boys were over ten that they began to tolerate footwear of any kind. Sneakers seemed to be the most acceptable; however, these were frequently torn from their feet when they were in an unhappy state. Joel was most prone to this. He would tear every article of clothing from his body during periods of distress. He exhibited a marked aversion for new clothing, especially stiff dungarees so that it became necessary to launder his new clothes several times before attempting to get him to wear them. Generally, both boys were denuditive; but again, Joel more so than Gene. It was not uncommon to see Joel, nude, running about the grounds in all kinds of weather. Despite this exposure to foul weather, he remained relatively free from common respiratory infections.

Motor Behavior

Hyperkinetic behavior pervaded every waking hour of the twins' lives. Their most outstanding expenditure of energy was rocking. They would rock in a kneeling position on the floor, grass, or furniture. Joel's favorite spot was a picnic table. He would clamp his fingers over the end of the table and, in a kneeling position, swing forward and back for hours on end. Gene seemed to prefer to rock standing, by placing his buttocks against a wall or piece of furniture, with his feet approximately two feet from the wall and his hands clasped between his thighs. Rocking was extended to walking as they would move about by thrusting one leg in front while dragging the other, with each forward rocking movement. Adding to the bizarreness of this peculiar mode of propulsion was the wild agitation of their hands.

A stick, twig, or stringy material might be held in their hands and thrust before them.

Absorbed as they were in these stereotypic patterns, they none the less acquired grace and agility in running, climbing, and leaping. Their swiftness and rhythm in motion usually amazed anyone looking on. They were capable of taking flying leaps from the floor to a table, landing smoothly on their shins.

Apart from eating, thumb sucking, hair twirling, and masturbatory activity, their hands were rarely used in any socially comprehensible activity. When string, sticks, ribbon, excelsior, or upholstery stuffings were at hand they would finger and fling them about with a characteristic choreiform movement of the hands. Because they delighted in this activity many adults provided them with boundless quantities of such stringy materials, thus exercising and reinforcing this behavior.

The intensity of their hyperkinesis was such that the many years of effort on the part of craft, music, and educational workers made no lasting effect. Only the most perfunctory interest was shown in using nursery school educational toys. Distractibility and the need to rock impaired any and all efforts to instruct them in the use of play materials. They were both most acceptant of music and often protested when it was not available. This led to special arrangements to provide music whenever possible and in whatever living space they occupied.

Linguistic Functioning

Both of the boys' communicative efforts were limited to gross manipulation of adults. They would take the adult's hand

and guide it towards whatever it was that they wanted. They produced a variety of vocalizations but no speech. Tape recorded samples of their vocalizations were gathered in craft sessions, educational therapy, the playroom, and during bathing and at bedtime.

Joel's vocalizations consisted of a few vowels and dipthongs. Only two consonatns were used and these infrequently. Most vocalizations were neutralized vowels such as "uh" which sometimes approximated "i," "a," or "oo," and the dipthongs "oy," and "uh-ee." These vocalizations occurred singly in a monopitch or two-pitched syllable, or as phrasal units with specific melody patterns. These melody patterns resembled chanting and usually accompanied his rocking movements; however, they tended to end on a rising note, suggesting an incomplete phrase. The voice quality of these chantings was pleasing to hear, although slightly muffled and breathy. His vocal mechanism appeared to be relaxed. His laughter was produced with a normal voice quality and with no muffled or breathy components.

On occasion, his vocalizations were loud, hoarse, or high pitched with his voice quality contrasting sharply to his musical vocalizations.

His limited range of speech sounds was similar to that of an infant; however, the melodies of his musical phrases were not consistent with an infantile level of speech development.

Gene's vocalizations were distinctive and tended to be repeated throughout the period sampled. A prominent vocalization was a babbling type repetition of the same syllables: "dyuh, dyuh, dyuh," "yuh, yuh, yuhee," "gootee, gootee, gootee." Often, these syllables were repeated six or seven times taking the form of a musical phrase which had a definite melody and rhythm. The melody tended to rise from the first to the middle syllable and then fall on the last syllable of the sequence. Each syllable was given equal accent and time. Occasionally, a melody would be sung using a series of vowels. These melodies did not resemble any of the tunes Gene heard in music sessions.

His frequent laughter appeared to be spontaneoulsy produced with a relaxed vocal mechanism. The vowel sounds "i" and "uh" predominated and were usually preceded by "h" as in "hi, hi," or "huh, hi," with only occasional use of a glottal stop in initiating the laugh.

During periods of both pleasure and distress Gene would produce loud, prolonged vowels with a raspy voice quality and with distinct variations in pitch.

The number of speech sounds which he produced were extremely limited. The only consonants heard were "t, d, k, g, y, m," and once an approximation of "l." The vowels "i," "uh," and "oo" predominated. Also, there were occasional utterances of vowels approximating "ee," "ah," "e," "oo," and the dipthong "i."

Asocial Behavior

A sense of isolation and aloneness was the most characteristic observation made of both boys. It was apparent that they lacked any effective mode of interacting with others. They seemed to prefer to remain at a distance and avoid eye contact for the major portion of the day. Usually they turned their backs on people as if the person's mere presence interfered with their pursuit of stereotypic activities. Only when some strong motivational system was operant did they seek others. This was usually to satisfy introcentric needs such as their desire for food; but more often their purpose remained undetermined because, without speech, adults were usually taxed beyond their imagination for any explanation of their bizarre behavior.

Response to Frustration

No impulse control was observed in either of the boys. When thwarted they would become enraged. Joel became especially difficult to manage when he was prevented from satisfying a particular need. He would pound on anything at hand, animate or inanimate, but most often himself. Both of his fisted hands would be banged repeatedly and forcefully against his head with a resounding thud. This would occur amidst screams and fearsome yells as he jumped and leaped about. Hand biting often accompanied these paroxysms in both boys. Joel often produced small lesions on his ears and nose from the wild banging of his fists against his head and clawing of his face. His animalistic shrieking and explosive actions were so awesome to watch that few people dared to approach him. From time to time he would throw himself with such force at anyone who was nearby that this occasionally resulted in injury to both adults and children. Some were bitten; others received lumps on their heads, a broken nose, or fractured ribs. Although Gene, too, became unmanageable during his rages, he rarely lashed out at others. He would rush about in a randomized explosion of energy, slamming himself against the walls or the furniture.

Response to Environmental Change

An extraordinary need for sameness was manifest in every aspect of the twins' lives. Differences in the slightest dimension of their daily experience could provoke untoward reactions. Accordingly, continuing efforts to provide an environment of sameness were made by the staff at Seaview. Sameness in the minutiae of experience was not accomplished, but sameness in the routine of daily living was generally achieved. When even the smallest deviation in the pattern of daily life occurred, the twins would become sorely distressed and create a storm. When things became too intolerable, automobile rides seemed to satisfy and calm them.

Response to Children

Interaction with other children, as well as with one another, was almost nonexistent. It was not that they were unaware of the presence of other children, but only that a totality of disinterest prevailed. Except for displays of aggression or when grabbing food or toys from others, avoidance of human contact was the norm. When other children were noisy, crying, or in any way upset, the twins' avoidance behavior was particularly marked.

As Joel was especially intolerant of others and prone to attacking them, he was maintained in an isolated play area. George, who was older and larger, was his only regular "companion"; but, despite their years of constant contact it was a rare week that passed without Joel striking George with the same quality and intensity of aggression which he directed towards inanimate objects.

Response to Adults

Both boys generally rejected adult contact; however, Gene periodically displayed a decidedly different response than his brother's total indifference. While the majority of Gene's time was spent in avoiding people, there were moments when he would attempt to satisfy introcentric needs by behaving in a smiling, flirtatious manner. This was usually observed when he was trying to get an adult to let him go outside or to give him candy.

Joel expressed his need for assistance by physically manipulating adults or by rage reactions leaving the adult to determine, by trial and error, what it was that he wanted.

As both boys were unresponsive to the verbal requests of adults, it was necessary to physically manipulate them in order to get them to follow any direction. This, too, was vehemently and vigorously resisted.

With the onset of pubescence the boys became increasingly more difficult to manage. They were so swift running that in order to control and contain them, every door had to be locked. This was especially true in Gene's case. When he was taken for a walk his hand had to be tightly held. Even so he managed regularly to get loose from his attendant. While outside roaming the grounds he often "escaped" by climbing the fence and would run to the commercial area of the town with utter disregard for traffic on the road or for the lawns, shrubs, or gardens of private homes in his path. When he was found in the town it might be at the candy counter of the drug store, or sitting on the fruit display at the super market, munching grapes.

At this stage of development, Joel became so violent that it was physically impossible for the female attendants to deal with him; thus, a male attendant was employed especially to care for him. Dramatic changes occurred as the male attendant consistently maintained the limits. With firm external control and in the structure provided, Joel came to accept the wearing of clothing and shoes. When at the dining room table he sat on his buttocks rather than his haunches and gradually increased the use of utensils. Most remarkable were his appropriate responses to the attendant's simple verbal commands. When his attendant would command, "Sit," Joel would sit. This occurred with enough frequency so that it was clear that he was capable of the rudimentary symbolism found in infrahumans. It was noted that gesture was a significant component of these commands, but that gesture alone did not achieve the desired response. As long as some vocal noise accompanied the gesture, Joel usually complied. There was no transfer of this learning to other adults. As with so many of the attendant staff, this young man left the institution in less than one year and Joel resumed his usual fractionated patterns of behavior. There had been no learning, only conditioning.

Health and Physical Status

In their isolated institutional environment, both boys were relatively free from contagious disease and rarely suffered even common colds. Their enormous expenditure of energy kept them lithe and lean. Considering their practice of pica it was remarkable that they were not troubled with severe gastrointestinal disturbances.

Just prior to the period of experimental therapy, Gene's height and weight were recorded as fifty-five and one half inches and seventy-two pounds, while Joel was fifty-four inches tall and weighed seventy-two pounds.

Experimental Therapy--Gene

Gene's bizarre postures and habitual body manipulations were so extensive that they detracted from his excellent physiognomy. His large dark eyes and delicate features made him an appealing child. He was small for thirteen with the stature of a ten year old.

The fifty-seven sessions of experimental therapy with the male clinician were characterized by Gene's absorption in stereotypic activity and minimal responses to external stimuli. The total absence of the normal processes of communication demanded that nonverbal modes of interacting had to be developed in order that a relationship be formed.

During the course of therapy he received 60 mg. daily of the tranquilizer Prochlorperazine (Compazine).

First Month (1st through 10th session)

When the clinician went to bring Gene to their first therapy meeting he was recalcitrant about going up the stairs to the therapy suite. As they passed the front door he made every effort to leave the building. It was felt that he thought that he was going to be taken for a walk or a ride which was so often a part of his afternoon routine. Restricting him immediately precipitated a temper tantrum. His distress was fully expressed in whining cries and agitated movements. He threw himself to the floor and, from a crouch, leapt into the air, jumping up and down, slamming the walls with both hands, only to run to another part of the room to repeat the performance. All of this was interspersed with momentary pauses to rock on his haunches. By taking a firm grasp of his arm the clinician was finally able to lead him up the stairs to the therapy room. Immediately upon entering the room he threw himself on BoBo, the puncho toy, and attempted to rock on it in a kneeling position. As it was an unsteady base upon which to rock he continuously slipped to the floor. Within a moment he jumped up, dashed into the bathroom, deftly unfastened the bolt on the rear door, and went flying down the hall with the clinician charging after him. Into his bedroom he bounded and, with one spectacular leap, landed on his bed in a kneeling position and began to rock. The clinician felt it was judicious to defer this session. Gene was returned to the play yard where he again became engrossed in pulling up grass which he chewed and swallowed.

The following session found Gene in a more pliable mood. Although he attempted to lead the clinician out of the front door as they passed it on the way to the therapy suite, he complied with the clinician's gentle physical persuasion. Once in the therapy room he began rocking on the table. One leg was folded beneath his buttocks while the other supported him on the bench. BoBo was pulled across his lap so that as he rocked forward the weight of his upper body was pressed against the puncho, thus a friction sound was produced as his clothing rubbed against the vinyl plastic material. Occasionally this movement chanced to squeak the nose of BoBo, but this was only happenstance.

None of the clinician's statements had any observable effect upon Gene. This was of particular note when the clinician unsuccessfully attempted to set a new limit. As so many other children used BoBo, it seemed desirable to restrict Gene from smearing his saliva over it. It appeared that he had an endless supply of spittle which drooled slowly from his mouth in long dribbles. He would wait until they broke from his lips and watch them splatter on the floor or on BoBo. At times he would experiment with his saliva by swinging two or three foot long drools in wide arcs, while simultaneously rocking without breaking the thread of saliva or the rhythm of his rocking. The clinician expressed the limit but first gave recognition to Gene's delight in this activity. His statements that Gene could not continue spreading saliva about the therapy room were useless utterances spoken as if to a deaf child. He gave no overt response when the clinician spoke to him; however, his awareness of the clinician's presence was indirectly shown through avoidance maneuvers. It seemed that he viewed the clinician peripherally as he would react when the clinician moved in his direction.

Towards the end of this session Gene discovered the infant pacifier on the table upon which he was rocking. Without breaking his rhythm in rocking, he reached for it, popped it into his mouth, and chewed it for the remainder of the session. The need to have something in his mouth was exhibited throughout the entire course of therapy. On some occasions he might put the entire pacifier in his mouth or bring something with him to therapy such as a peach stone or a mouthful of grass or leaves. With his mouth so frequently engaged it was not remarkable that his vocalizations were limited. Even when his mouth was not otherwise occupied, he would remain silent for long periods, sometimes for entire sessions. His most often heard vocalizations were chantings accompanying his rocking and infantile whining usually occurring with the least provocation or irritation. Often this month he sought to leave the therapy room and upon discovering that he could not he would emit a few cranky whines. His facial grimaces showed little annoyance but his actions conveyed the feeling that if the limit was enforced, he would respond with a storm of protestations and rage.

In order to communicate the feeling that Gene could have some degree of freedom, the clinician allowed him to terminate the session early on several occasions during this month. On some days Gene led the clinician to the kitchen in pursuit of a snack, and on others he tried to lead the clinician out of the building. As free access to the kitchen had been a privilege he had always enjoyed, and as this was the time of day when a snack was normally given, the clinician's efforts to by-pass the kitchen were futile. He would pull away from the clinician's grasp and rush into the kitchen, going directly to the refrigerator where he would select something to eat.

On one occasion the clinician did acquiesce to Gene's tugging and pulling towards the street in order to establish just what it was he wanted outside and where he would go. Because Gene had a long history of running away, the clinician maintained a firm grip on his wrist as he rocked his way towards the main street of the town. Each step of the way he would thrust his right leg well forward of his body, rock by bending at the waist while his left leg was pulled along. During the forward thrust of his body his hands were thrown into wild agitation as if he were clutching at some unseen object. A rhythmic chanting accompanied each movement. His absorption in rocking seemed to make him impervious to the sights and sounds of the world outside of the institution. Not until they reached the five and ten cent store was any interest shown. It appeared that he was well aware of this store as a potential source of candy. His excitement and insistance to go into the store was intense. A candy bar was purchased which he immediately consumed. Upon approaching an ice cream shop he tried to drag the clinician inside. It was not possible to dissuade him without forcefully restraining him. Circling the block on the return leg of the trip avoided any further eating temptations but created new problems as they came near a church which Gene had been taken to on many previous walks by his attendants. In the absence of any means of verbally expressing his wants, it was felt that it would be important to determine the specific nature of his wish to visit the church. When he went in, he sat in a pew and commenced to rock with his eyes fixated upon the flickering candles. Fifteen minutes passed and he still did no more than rock. He was thoroughly resistant to leaving and again it was only by forcefully pulling him that he was led from the church. His rocking gait was used throughout the entire walk up to the moment he was released in the play yard where he ran about aimlessly for a few moments, jumped several times, and then began his rocking gait behavior again.

This rocking and jumping behavior was seen in the therapy room throughout the entire course of therapy. Its intensity became a guide to his mood. When he was relatively content there was a lessening of the fragmented flying and jumping about. He could squat quietly on the floor, fingering particles of sand or dust which he might find there. Because of the ease with which he could slide about on the linoleum, he would propel himself around the floor while remaining in a kneeling position. This was much like the hitching mode of propulsion so common in infants. When he paused in a moment of relative calm, he appeared as if he were in a trance or absorbed in hallucinations. In the midst of these quiet periods he would suddenly cease all activity, look off into space, and smile knowingly as if the nicest thing possible had just happened or was about to happen. Often during these quiet times the rapidity with which his mood could suddenly change was remarkable. It was as if some horribly frightening notion had suddenly entered his thoughts or some extraordinary physical pain had struck him. No signs or signals foretold these sudden shifts in mood. He could be calm, producing happy vocal noises and in a second shift to screams of pain and anguish and start to dart about the room as if demons were chasing him. It was observed that under both conditions of intensely experienced pleasure or distress, he would bite the back of his hand and emit a howling noise.

By the end of the first month, the clincian was able to identify Gene's unique pre-toileting patterns. No other dimension of his behavior became so clearly identifiable as when he was anticipating a bowel movement. A unique display of excited, uncoordinated dancing and exuberant laughter finally came to be recognized as the precursor of a bowel movement only after several episodes during which feces were scattered about or a pool of urine had accumulated on the therapy room floor. Once identified as pre-toileting behavior, the clinician was able to lead him to the toilet which he would mount, placing his feet on the toilet seat, assuming his typical squatting posture. At first, it was necessary to unfasten his clothing for him, but through gentle prodding, emphasizing gestures, he would pause long enough to pull his trousers down. Although the clinician repeatedly indicated that Gene should unfasten the buttons or zipper on his trousers, this was not integrated throughout the entire course of therapy. Even when he was on the toilet, Gene was apt to continue his hyperkinetic discharge. Unless he was restrained, he was prone to leap from the toilet seat and rush about, dropping a trail of feces behind. When offered toilet paper, he gleefully grabbed it up, not to wipe his rectum, but as something he could shred and fling around. His stools were of a very large caliber and intertwined with fragments of many undigested solids he had managed to swallow in the course of the day.

Of all the play things available, the only one that Gene showed any sustained interest in was BoBo. It was a rare session when he failed to have some contact with it, usually by incorporating it in his rocking. Yet, he managed from time to time to use it in the expected ways, resoundingly whacking it or tweaking its nose. When he had trouble manipulating it into positions whereby he could rock against it, he would display the same annoyance towards this inanimate object as he would towards people who were not complying with his wishes. In direct contrast to these angry displays, he was capable of smiling and laughing at BoBo with the same degree of enthusiasm as he could towards people. When he wanted something from the clinician, he would often try to gain his goal by behaving in a charming, seductive manner more consistent with feminine behavior than that of a thirteen year old male. Gene would thrust his face towards the clinician's,with eyes sparkling, eyelashes flickering, head and shoulders cocked to one side, and produce what only could be described as girlish giggles and squeals of delight. This quality of sweet flirtatiousness was evident with sufficient frequency and indiscriminateness outside of therapy so that it could not be attributed to any peculiar feature of the developing child-clinician relationship.

The clinician's comments about Gene's expressions of affect or any verbal descriptions of his behavior continued to be fruitless in so far as they might have furthered the expression of a particular feeling. There were no themes in his play which the clinician could reflect. The only readily accessible basis for contact was on a physical level. Gene was not acceptant of the clinician's overtures, but would initiate contact himself. At times he became thoroughly demanding of close contact, actually curling up in the clinician's lap.

Second Month (11th through 21st session)

Further examples of vacillatory behavior towards going to therapy were seen in the course of this month. On several occasions Gene refused to leave the play room, preferring to remain there to rock. Additional difficulties were encountered while enroute to the therapy room. One day while proceeding through the dining room he spotted his mother and pursued her, attempting to get her to give him some candy. No amount of cajoling could interest him in mounting the stairs to the therapy room. His mother gave him his favorite candy, marshmellows, as an inducement but this only served to increase his demands. In order to avoid any further repetitions of such episodes, it was planned that his mother would remain out of sight during the time Gene would be on the way to therapy. This type of manipulation occurred regularly, for whenever Gene spied his mother nothing would placate him until she provided some candy or took him into the kitchen to get some other sweet, fruit, or ice cream. It seemed that his mother represented only a potential source of things to eat as their interactions were largely centered around activities in which food was present. Despite the plan to avoid contact with his mother prior to sessions, it was not always possible; therefore, some sessions had to be omitted rather than exert undue pressure to get Gene to go to therapy. It was not until the end of this month that he began to accept therapy as part of his routine, but at no time throughout the course of therapy did he show any consistency with regard to staying in the therapy room for the entire session.

A definite increase in child-clinician interaction was noted during this second month of therapy but this, too, remained highly inconsistent. Some days he could spend the entire session rocking with BoBo, impervious to the clinician's presence, while on other days he seemed insatiable in the amount of direct contact he sought with the clinician. On such days he would sprawl across the clinician's lap, pull the clinician's face close to his, smile, stare into his face, laugh, and giggle. Also, he would finger the clinician's face and occasionally run his hand inside the open collar of the clinician's shirt.

The relationship continued to be limited to physical exchanges and was devoid of any verbal communication. Nothing said by the clinician evoked a meaningful response. A most striking example of Gene's lack of response to the clinician's verbalizations occurred when, at the close of several sessions in which Gene had made repeated attempts to leave the room, the clinician stated without gesture, "Our time is up now. We can go." This was one of many instances which drew attention to Gene's general unresponsiveness regardless of whether statements were positively or negatively valenced.

Gene's play remained thoroughly stereotyped, introcentric, and without thematic content. Reflections of feeling or interpretations of his behavior could not be made. Maintenance of the permissive atmosphere and the nonverbal communication of acceptance did not seem to effect the development of the relationship in the ways usually expected in relationship therapy. It was, rather, the clinician's quiet unobtrusiveness and readiness to respond to Gene's introcentric needs that provided a degree of comfort during the half hour therapy session which exceeded that available to him within the institutional milieu. Imitations of his motor or vocal behavior, which proved so useful with the other children in furthering the communication of acceptance, proved to be of minimal value. At first, when the clinician tried imitative behavior, Gene rejected it by turning away; however, after a few sessions he came to accept the clinician's parallel rocking. Gene seemed to find it intolerable to have any movement directly in front of him while he rocked.

No new interests were displayed. His contact with BoBo and those toys which he could mouth or chew continued. Attempts to involve him in shared activities proved to be futile. He could not engage in even the simple game of rolling a ball back and forth. A balloon was introduced many times during this and subsequent months. Instead of using it appropriately, Gene incorporated it in his stereotypic pattern by shaking it in his hand or between his teeth. When the balloons broke he never displayed a startle response, but would chew on the fragments of rubber.

Third Month (22nd through 29th session)

During this month the clinician actively intervened in Gene's stereotypic activity. It was found that playing with him as one would an infant evoked profuse laughter. He especially enjoyed piggy-back rides, being tickled on the ribs, and somersaults. Under these conditions of close physical proximity, Gene exhibited a pronounced interest in manipulating the clinician's hair. Not only the hair on his head, but eyebrows, eyelashes, and any of the hair on his chest, arms, or legs. Gene also seemed fond of fingering the clinician's face; therefore, during such encounters attempts were made to encourage the learning of the names of facial parts. Although he allowed the clinician to manipulate his hand to touch each part as it was named, he showed no interest in accompanying this with sound production. For him it was only a game, uproariously funny but without any recognition of the symbol relationships. After many presentations distributed over several sessions, it was concluded that Gene was incapable of integrating even this most concrete language stimuli. While he was not able to reproduce any of the word stimuli it was thought that he might at least be able to identify the facial parts as they were named for him; but, this too was not within the scope of his ability.

Gene's acceptance of direct physical contact with the clinician provided the opportunity to guide him towards specific activities with the play materials. The wooden building blocks which were usually mouthed, chewed, or thrown about, were presented to him in a tower of square blocks. He would knock the tower down but would rebuild it when each block was handed to him one at a time. His attention span for such activity was less than one minute. His hyperkinesis prevailed. Similar responses were noted when clay or crayons were introduced. He would only make a feeble gesture to manipulate the clay or a few random scratches with the crayons. Unless the clinician prevented it, both were apt to be eaten as Gene would pop them into his mouth in a lightening quick movement.

Another by-product of the close physical contact was the curious finding that Gene took immense pleasure in being bombarded with auditory stimuli. He would often draw the clinician's head close to his ear and squeal with delight when the clinician spoke or sung directly into his ear at vocal intensities well beyond the expected tolerance of normal persons.

A change in his attitude towards coming to therapy was observed in the course of this month. The reluctance to come which had been so prominent in the first months was now replaced by fond greetings expressed in dances of delight and the often heard vocalization of "goo-tie, goo-tie, goo-tie." This was especially so following sessions during which there had been extensive physical contact. Even though he would revel in rolling about on the floor with the clinician, seemingly enjoying a session thoroughly, he continued to abruptly terminate such contact by attempting to leave the therapy room, dragging the clinician by an arm or a leg towards the door.

His midafternoon quest for food accounted in a large part for this drive to leave. Also, it was felt that during fair weather he simply preferred to be out of doors. This was born out by the observations made on days when he would spot other children playing beneath the therapy room window and eagerly seek to get out. On one occasion he saw the other children being served the usual afternoon snack in the play yard. Gene had shown no capacity to delay gratification in any aspect of his environment, and therapy was no exception. The chance that he might miss out when food was being served precipitated a furious effort to leave. Accordingly, this like many other sessions required an early termination. When he pressed to get something he wanted and the least resistance was met, he quickly produced the nagging, whining noises which were very much like those of a fussy infant. At times, this whining would assume the characteristics of an animalistic snarl.

Generally, his communication remained at the level of gross manipulation; therefore, it was not always interpretable. The principal exceptions were the distinctness with which he made it clear that he wanted to leave therapy and the unique configuration of excited behavior which he manifest when he was about to toilet.

While Gene's pre-toileting behavior had no communicative intent, it did serve to alert the clinician to avoid some of the smearing which otherwise would have occurred. By comparison, most of the other children studied required more frequent toileting. When Gene needed to urinate he would usually stand and direct his stream into the toilet bowl; however, his aim was not the best and when he would squat on the toilet seat for a bowel movement he would often leave a pile of feces on the seat rather than in the bowl. Once in a while he would jump from the seat with a length of his stool still hanging from his rectum. Under these circumstances or whenever he happened to drop a stool on the floor, it required fast action on the part of the clinician to prevent Gene's smearing or eating his own excrement.

While toileting he usually exhibited an interest in fondling his penis. This he did by flipping it about with his fingertips. When erect, he would pull back the prepuce, carefully scrutinizing his actions. None of this was pursued for more than a few minutes as he invariably would resume his more generalized hyperkinesis. It was felt that part of his frequency in toileting was possibly a device to have freer access to his genitals or feces.

Fourth Month (30th through 38th session)

A few variations in Gene's behavior were observed this month. He continued to exhibit his intense need to rock but would occasionally break his pattern to rush up to the clinician, smile, laugh, peer intently into his face, and produce his characteristic vocalization of "goo-tie, goo-tie, goo-tie." During these moments of obvious delight, he might attempt to climb into the clinician's lap or perhaps onto his back for a ride. Gene would try to engage the clinician in vigorous play by lying on his back and kicking his feet in the air. When tickled or somersaulted, streams of laughter were evoked; however, just as suddenly as one of these periods of extensive interaction began they would end in a bout of rocking.

One aspect of his rocking behavior which became more prevalent in this and the ensuing months was the special position he assumed--the kneeling attitude of a Moslem at prayer. With his head touching the floor and buried in his arms, he would rock his body from side to side accompanying this with a humming chant much like the gentle soothing sounds which many parents make while trying to comfort or quiet a restless child.

Typical of the erratic character of his behavior, he would dramatically shift from this quiet rocking to paroxysms of leaping, running, and jumping; all of which would be interspersed with brief pauses to bite the back of his hand. Were it not for his smiles and copious laughter, the intermittent shrieks and snarls could have been easily perceived as expressions of distress rather than exuberance. It was apparent, at this point in the therapy process, that the noisemaking accompanying his hand biting was of the same quality whether pleasure or pain was being expressed.

While the extensive pattern of infantile orality was manifest throughout the previous months of therapy, additional observations were made this month which called attention to the extraordinary asociality of this behavior. It had been reported that Gene was encopretic and presented a true pica; however, such knowledge was reinforced by actual observations of his eating feces, cerumen, and nasal mucous. Another aspect of his orality was noted in a peculiar manipulation of his tongue. When his mouth was not otherwise occupied in oral-tactile stimulation using an object, he would set his tongue in tremulous motion by pressing its tip against his lower teeth and vibrating the tongue blade.

Further observations of Gene's masturbatory behavior were also made this month. Prior to therapy the clinician often would find Gene squatting on a bench with his trousers unfastened so that his genitals were neatly exposed to swing freely in space. He would be busily engaged in agitating his penis by bouncing it against his fingertips. In both the playroom and during therapy sessions he would suddenly thrust both hands through the waist band of his trousers in order to manipulate his penis. As in all areas of his asociality, he was completely disinhibited and failed to respond to any verbal limitations.

His difficulties with language comprehension were specifically demonstrated in a session in which he was asked to select an object by name from a group of common objects. His attention was gained momentarily as he sat alongside of the clinician in a relatively quiet mood. A knife, fork, and spoon were set before him with each being named as they were placed on the table. Despite numerous presentations he was unable to select the appropriate item when it was requested. His only performance was to hand all of them to the clinician when the "give me" gesture was included with the request. The same type of response was seen for many other objects even though they were things with which he was familiar and were, therefore, basically concrete.

Most sessions continued to end with a visit to the kitchen for a snack. One aspect of his eating pattern which was repeatedly seen during these post-session snacks was his meticulousness and finger dexterity in picking apart foods. Cookies and cake would have their filling or frosting carefully stripped off and eaten separately. Chocolate covered ice creams were handled in the same manner but, of course, created more of a mess. When his face, hands, or clothing were smeared with the melted ice cream, he showed no sign of concern nor ever made any attempt to clean himself and was reluctant to let others do so. For such reasons and because he would smear bowel movements which were not "caught," there were days when his attendant had to bathe him and completely change his clothing as many as three or four times.

During this period some sessions were cancelled because Gene was scheduled for another activity which conflicted with the therapy time, but only twice because of illness. Once this month he became violently sick to his stomach as the result of ingesting his brother's medication. In order to administer the children's medications, they had to be secreted in candy. It was one of these "medicated candies" that was being given to his brother which Gene grabbed and popped into his own mouth. This produced a severe gastrointestinal upset lasting twenty-four hours. That such problems should be encountered more than once was not unique in the lives of the twins, for in the subsequent months Gene again managed to ingest medications which were not intended for him.

Repeated displays of choreiform hand movements had been noted in Gene's play but not to the extent that they dominated many of this month's sessions. In the toy closet he discovered a dozen wooden slats which were originally made for stirring paint. He would pick up a pile of slats, cast them about the floor with a twisting motion of his wrist, sending them flying in all directions. Then, sliding around the floor on his knees he would "chase" the slats, only to again wildly agitate them. The characteristic vocalization usually accompanying this performance was the endlessly produced, "tcha, tcha, tcha."

As all of his play lacked organization and was completely devoid of abstract behavior it was remarkable at the end of this month that the clinician was able to engage Gene in constructing a tower of blocks in the shape of an "H." His participation in this amounted to accepting the necessary blocks as they were handed to him to place on the structure.

Fifth and Sixth Months (39th through 57th session)

Building on the accumulated sensitivity of the fine nuances of Gene's behavior it became more possible for the clinician to structure some part of many sessions during this period in attempts to directly assess his perceptual world.

Gene's unusual interest in amplified sound became more evident in this period. Not only did he seek to have the clinician speak loudly in his ear but delighted in listening to amplified sound through earphones which were connected to the tape recorder's amplifying circuit. Upon introducing the earphones with the volume level set at as much as one hundred decibels, it was startling that he continued to seek such a uniquely loud listening experience. Whenever the earphones were offered he would cease any activity, including rocking, to spend a few moments listening to his own giggles and laughter greatly amplified. Because of this extraordinary interest in sound it was felt that he might be stimulated to imitate speech sounds if they were amplified; however, attempts at this were never successful.

In a like manner it was felt that he might be more responsive to language stimuli if they were amplified. Therefore, he was asked to perform the simple task of selecting one figurine from a group representing the members of a family. While he was unable to respond correctly, he nonetheless behaved as if he wanted to do what was being asked of him. He would randomly pick up one of the figurines, smile, and hand it to the clinician. The quality of his smile and the manner in which it was directed toward the clinician was thought to be part of approval seeking behavior. When the clinician responded with smiles and verbal expressions of praise, Gene reacted with further displays of joy and satisfaction. While this type of exchange was very short-lived its frequency increased in direct proportion to the clinician's introduction of task-oriented activities. If he were left to his own devices he would continuously pursue his patterned activities of rocking, spitting, drooling, or tossing the wooden slats around. When the clinician saw that he was amenable to directed activity, every possible opportunity was taken to guide him towards socially recognizable forms of play. It was not possible, however, to communicate to him what was expected in any but the most infantile activities. One such activity, which he had no difficulty in accepting, was the use of the shoe lace training toy. Although he deftly pushed the shoe lace through each eyelet, he had no ability in forming the bow knot. Verbal and gesture explanations were used but to no avail. He responded by handing the toy back to the clinician and smiling as if to say, "Now I've done what you wanted. Please tell me what a good boy I have been and don't bother me any further."

The most fruitful investigation of Gene's comprehension of verbal language was made during the final month of therapy. It was well known that he was strongly motivated in the pursuit of candy. Therefore, by placing candy in various parts of the therapy room and by verbally directing Gene to its location it became possible to assess his recognition of a variety of words. Despite his motivation and the repetitiveness of the presentations, Gene was unable to locate any candy in response to only verbal stimuli. His abilities in color discrimination tasks were also surveyed by using candy as a motivating force in conjunction with four cups of primary colors. He was permitted to see candy placed under one of these. In order to retrieve the candy he had to follow the particular cup through multiple movements as they were randomly mixed. It was thusly determined that Gene could follow the movements of the cups, reflecting an ability to grossly discriminate their colors. Using a similarly organized presentation but with the location of the candy restricted to an auditory cue alone, it was reaffirmed that Gene was, in this case as in all others, unable to integrate language stimuli.

The variability of Gene's mood continued through to the termination of therapy. Periodically he persisted in his efforts to leave the therapy room, seemingly unable to tolerate the imposition of the limit any better than in the earlier months of therapy. There were still days when he was so preoccupied with his introcentric needs that little or no interaction took place; yet, there were others in which extensive interaction dominated the session. The maximum display of Gene's acceptance of physical contact with the clinician occurred in the sixth month of therapy during intense periods of rocking. He would rest his buttocks against a wall with his hands pressed between his thighs and, by bending at the waist, swing his upper body forward and back in a set rhythmical pattern. When the clinician casually placed his hand on the back of Gene's neck and accompanied his rhythm, it was a remarkable event for he did not draw away snarling as had been so typical. Once this contact was established, the clinician was able to change Gene's rate of rocking by varying the pressure on his neck. Rather than reject this manipulation he indicated his enjoyment by turning his face to smile at the clinician.

During the final weeks of therapy Gene further demonstrated his readiness to allow the clinician to rock with him. It was extended beyond pushing Gene forward and back as he leaned against the wall to a similar pattern when he rocked on the floor, table, bench, or windowseat. Despite this improvement in the relationship and Gene's expressions of positive affect he continued to want to leave the therapy sessions early. His most sophisticated gesture communication was seen during a session when he handed the clinician his coat as an expression of his wish to leave. All other communicative efforts remained primarily at the infantile level of cries and whines.

Therapy was terminated with the gradual reduction of the frequency of sessions.

Experimental Therapy--Joel

Joel's appearance differed minimally from that of his brother so that their individual identities were dependent upon minute facial features. Like his brother, Joel's dark hair and eyes gave him a basically handsome physiognomy. In overall stature Joel appeared two to three years younger than his thirteen years.

Several aspects of Joel's behavior gave him the appearance of being beyond the usual forms of human interaction. He produced no speech whatsoever. Most of his behavior centered upon repetitive, self-stimulating activities such as rocking, thumb sucking, and hair twirling; accordingly, the development of a relationship was markedly impaired.

During the first two months of therapy Joel received from 300 to 500 mg. daily of the tranquilizer Chlorpromazine Hydrochloride (Thorazine). Ashe was especially unmanageable, destructive, and aggressive. Thorazine was gradually withdrawn with the empirical introduction of 5 mg. daily of the anticonvulsant Primidone (Mysoline) and 30 mg. daily of the tranquilizer Librium. During the third month of therapy, Librium was withdrawn and Joel was maintained throughout the remaining months on 250 mg. daily of Mysoline.

He was seen by the male clinician for sixty sessions.

First Month (1st through 10th session)

The limited and characteristically repetitive aspects of Joel's behavior were observed during the initial session. He managed to keep in motion for the entire thirty minutes, assiduously avoiding contact with the clinician. No responses to the verbal communications of the clinician were elicited. From the first moment he entered the room, Joel became absorbed in pursuing tactile sensory experiences principally utilizing the puncho toy and the infant's pacifier. A major part of the time was spent lying across BoBo and rolling back and forth. He also attempted to stand and kneel on it. During this time his behavior vacillated from a quiet mood of contemplation to highly volatile, aggressive outbursts. He could calmly lie on his back, fingering the vinyl plastic form of the puncho and simultaneously chew the pacifier or twirl his hair with his forefinger; but suddenly in a paroxysmal discharge of energy he would bounce to his feet, smack BoBo, charge around the room, jump up and down, and fall upon BoBo again.

Throughout this session the infant's pacifier remained with him, being chewed rather than sucked. After several attempts he succeeded in pulling the nipple from its retaining ring. As the clinician knew that Joel was prone to ingesting anything that he could put into his mouth, an attempt was made to verbally limit this behavior. These verbal expressions proved futile and it seemed that nothing short of actually taking the pacifier from him would have been understood. Joel's attempts to masticate the nipple were not successful; therefore, it was not necessary to reinforce the verbal limit with physical manipulation.

The most repetitive vocalization to occur in this session was a growling which, at times, sounded much like a bark. These noises accompanied a series of quick blows mainly directed at BoBo but also at his own body and head. They were akin to the light, thrusting jab of a boxer but with an open hand rather than with a clenched fist.

A momentary curiosity about the one-way vision mirror was evinced when Joel took the clinician's hand and guided it to the top of the mirror's casing. It was as if he perceived it as a window which might be opened if the clinician would release the catch. When this was not accomplished, his curiosity ceased. Another elemental form of problem solving was seen in his attempt to examine a lamp which was mounted on top of the tape recording cabinet. By climbing on a bench which he had moved into position he was able to reach the light. When he tried to pull it down the clinician had to intervene by lifting him from the bench, for the words used to express the verbal limitation were ineffectual.

Towards the end of the session he suddenly became frustrated by his lack of success in balancing on BoBo and displayed a characteristic rage response by pounding his fists against the sides of his head in the same synchronous, sweeping motion of the arms seen when cymbals are struck. A moment later he indicated his wish to leave by directing the clinician's hand to the knob of the hallway door. As he made his exit, he thumped his right hand against his chest while emitting animalistic grunts.

The second session found Joel in a euphoric state. This was manifest as he twisted, turned, and rocked while shuffling about the room in a primitive dance which he accompanied with joyful chantings and the fondling and mouthing of two bean bags.

The patterning of his dance and its rhythmical movements were entirely native or aboriginal in character. He paused only to rock or to sprawl about on BoBo. As he proceeded in his dance the clinician attempted to establish contact by parallelling both his movements and his vocalizations. This was done with a degree of trepidation because Joel had displayed annoyance by turning his back whenever the clinician moved into his field of vision; however, he immediately responded to these imitations by looking at the clinician in astounded disbelief. Repeatedly glancing at him, Joel's facial expression portrayed more dismay than displeasure at the clinician's intervention.

A shift from this dance activity occurred when Joel suddenly dashed into the bathroom and began to fill a drinking glass from the hot water faucet. Joel's quick response to the clinician's direction that he should use the cold water faucet could not be construed as definite evidence of language comprehension as it could not be known whether or not Joel had made this temperature discrimination independently.

At the close of this second session, another rapid response was elicited to the verbal direction, "Let's go back to Dick now." As this was said without gesture it seemed highly incongruous that Joel immediately ceased his activity and went to the door. The paradoxical, rapid responses to language stimuli parallelling an overall lack of response compounded the difficulty in establishing his language comprehension status.

Most of Joel's reactions to the clinician were in the nature of avoidance behavior. At times he would turn his back or move away when the clinician happened to come near. At other times he was so absorbed in rocking that he would become annoyed if the clinician even crossed his line of vision. His rocking was usually done in a kneeling position. He would swing forward on his knees and back to a sitting position where his buttocks touched his ankles. While rocking, his gaze often appeared to be fixated upon some imaginary point in space.

A quality of unpredictability and variability in Joel's behavior coexisted with his rigidity. At one moment he could be casually and gently fingering a balloon and with no forewarning smash it, growling angrily. Then, in a burst of fury he would leap upon the table, rock for a moment, jump back to the floor, and rush wildly around the room. In less than a minute he could shift from this agitated state to one in which he would laugh, giggle, and dance gaily. Within the same brief span of time he could appear completely placid, where lethargic movements prevailed as he lolled on the floor, but with the suddenness of a cat, he would fly at BoBo and furiously pound it.

In the course of this month he manifest a continuing need for oral stimulation. If any object could be fit into his mouth he would explore it in the same manner as an infant. He not only chewed on the nipple of the pacifier and the nursing bottle, but shredded the bathroom sink sponge, and gnawed on the wooden blocks, window sills, broken bits of balloon, and scraps of broken linoleum. Many of the smaller particles of these materials were ingested with no observable ill effects.

Joel spontaneously toileted enough times this month to establish clearly his unique performance. His trousers were pulled down with a forceful tug without undoing his buttons or zipper so that all of them were eventually torn apart at the waistband and had to be supported with suspenders. Although he did stand to urinate, when defecating he assumed the squatting posture of primitive men with his feet planted firmly on the toilet seat. Of course, this meant that he had to completely remove his trousers. Unless the clinician handed him some toilet paper, he never made any attempt to wipe himself. When he did use the toilet paper, it was done with a cursory swipe or two. When he completed his toileting, he would leap from the seat usually leaving his trousers behind.

Many sessions were ended abruptly as Joel made strong efforts to leave the therapy room. He would manipulate the clinician's hand in order to direct him towards the door. This, plus the production of annoyed vocal noises, expressed clearly his wish to leave. At such times the clinician found that it was futile to attempt to encourage Joel to remain for the full half hour. No limitation or restriction could be tolerated. In fact, the least amount of insistence upon any limit was found to precipitate a catastrophic rage response in which he would throw himself to the floor on his shins, bang his elbows against his knees, and beat his fists against the sides of his head. All efforts to redirect him were naught; therefore, so as to avoid these explosive outbursts, the clinician responded as quickly as possible to Joel's crude communications. Much like his twin brother, his wish to leave proved to be to get something to eat. Joel would lead the clinician to the kitchen to "raid" the refrigerator. He would rummage about for some fruit or grab a piece of cold meat and, with a two-handed approach, stuff his mouth indiscriminately dropping bits and pieces to the floor. Once he had obtained some food it was possible to guide him to the table, but as soon as he finished eating what was in his hands, he would bound back to the refrigerator for more. His interest in food during therapy sessions seemed to fluctuate in proportion to his noontime consumption. Because of his sudden outbursts of rage, many of his meals ended in total chaos with his dishes thrown to the floor and very little actually eaten. It was, therefore, not remarkable that by two o'clock he was genuinely hungry, rather than just interested in a snack of sweets. When he was not hungry he would remain in the therapy room and, upon leaving, would be content to by-pass the kitchen.

Second Month (11th through 20th session)

A profound change in all dimensions of Joel's behavior occurred in the first part of this month when his male attendant was discharged and a female attendant took over his care. The young man who had been caring for him had developed a highly structured routine and had been able to exert the necessary physical manipulation to maintain some minimal limits. Some inroads had been made in overcoming Joel's enormous lack of socialization under the firm but gentle controls instituted by the male attendant. At the time of the shift in workers and a return to an essentially laissez-faire mode of management, Joel displayed an increasing frequency of aggressive and self-abusive behavior. His self-mutilation was centered about his face and head. The repeated pounding of his head in the area of his ears had left them with several bloody cracks which did not get a chance to heal. At times, he struck his head with all the power he could command; yet, he never gave any sign of physical discomfort. Clawing at his face produced additional sores on his nose, forehead, and cheeks.

From session to session there was an enormous variation in the range of his behavior. Prior to a session, he could give every indication that he was eager to come to therapy with a facial expression of happy anticipation as he beckoned towards the therapy room; while, on another day, he could be so completely absorbed in rocking that nothing would distract him. Such distinctly contrasting behavior also took place within the therapy room. Gleeful, joyous sounds could be heard as he flitted about the room but, with the sudden swiftness of an angry cat, he might pounce on BoBo or throw himself to the floor with a scream of anguish and commence to beat his fists upon his head and alternately bang his elbows against his knees. At no time could it be said that he was placid or calm. Constant motion was now the norm. Thus, gaining his attention no matter what the stimulus seemed an impossible task. Yet, there were rare instances when Joel responded to the clinician without giving any sign that he had been attending. For example, with a ball in his hands he would be rocking on BoBo with his back towards the clinician when the clinician would ask, "Give me the ball." Joel might toss the ball in the general direction of the clinician without looking towards him. Apart from a few vague responses of this type, the overwhelming majority of the clinician's verbalizations went unheeded so that in this dimension of behavior he was consistent. The clinician's impression had been that Joel generally was indifferent about any form of contact and that his lack of response to verbal stimuli was simply a part of this total configuration of indifference; however, by the end of the second month, as a sufficient number of seemingly selective responses to verbal stimuli had occurred, it was difficult to ascribe his generalized unresponsiveness to a basic rejection of human contact. It appeared rather that he was not integrating what was said to him and was incapable of responses which required a high order of symbol association. An examination of his responses had revealed that a common factor existed in that they were elicited by low level, concrete stimuli which had been highly conditioned through repetition since early childhood.

Throughout this month the lack of eye contact, verbal or physical interaction, and overall aloofness to the clinician's presence characterized session after session. Only when the clinician actively intervened in Joel's ritualistic pursuits was awareness of his presence indicated. The only self-initiated contact regularly seen was when Joel would manipulate the clinician's hand in an effort to indicate his desire to leave the therapy room.

Third Month (21st through 28th session)

In contrast to the preceding month a dramatic change in the relationship occurred during this period. Whereas Joel had been so inaccessible, he now allowed the clinician to have some physical contact with him. Having recognized that verbal contact was not feasible, the clinician felt that at least some auditory contact was needed. Accordingly, while it was clear that Joel did not understand what was said to him, the clinician either spoke or sang to him. Singing proved to be valuable in that it provided a unique demonstration of Joel's awareness of the clinician's presence. Whenever the clinician remained silent for any period of time Joel would become agitated, emit angry vocal noises, and display intrapunitive behavior. The moment the clinician resumed singing, Joel would return to his relatively calmer state. Seemingly content he would suck his thumb, finger his hair, and rock on his haunches. The infrequent periods of calm which he had previously experienced had been for less than a minute; however, he now began to display these quiescent states for as long as ten minutes. While in these relatively peaceful moods he often seemed contemplative, especially during moments when he would cease all activity and gaze at the clinician as if he were carefully attending to his vocalizations. By contrast to his usual asocial behavior what seemed even more remarkable at this point was the fact that he actually smiled at the clinician which had previously been a most rare event. It could not be determined whether this behavior was attributable to the therapy process for at this time a major change in his medication was instituted on the recommendation of the research staff's consultant in pediatric neurology. The anticonvulsant Mysoline and a tranquilizer, Librium, were introduced.

As Joel became more amenable, cautious explorations were made to encourage physical interaction. A light caress on his face and cheek, which had been so violently rejected previously, was now accepted. Gradually more physical contact was introduced. It was found that the most productive interaction occurred when the clinician joined Joel on the floor and rolled about with him or relaxed in quiet contemplation. This, combined with singing to him, had a generally quieting effect. Sometimes Joel would rest his head on the clinician's shoulder as together they sprawled about on the floor. With the increase of physical contact there was a lessening of rocking, headbanging, and urges to leave.

Although these quiet periods became more frequent, rages and violent shifts in mood were still present especially when the clinician had to impose limits or in any way interfere with Joel's activity. By maintaining a constant vigil for the subtle signs that Joel was about to begin a rage, it became possible to divert him occasionally. The first signs of an impending outburst were a few swift blows of his elbows against his knees. Successful intervention was accomplished by picking him up and generally "rough housing" with him. He could, at times, be shifted to a mood of joyousness which he would express by laughing or dancing about the room, often accompanying his dance with the chanting of elemental musical phrases. He now seemed able to tolerate a few minutes of such vigorous body contact; but despite his apparent enjoyment he did not actively seek it and would invariably resume his typical isolated activities when the clinician paused. He still seemed most content in habitual self-manipulations with little or no contact with anything outside of himself. If he did use an object, it was incorporated in his rigidly patterned activity. While BoBo was the toy he chose most frequently, it was never used to punch or kick, but rather to lean or kneel upon while rocking. A continuous search for any small object which he could fit into his mouth to chew and, if possible, ingest continued as a definite focus of interest.

Fourth and Fifth Months (29th through 51st session)

During this two month period a positive attitude towards coming to therapy was regularly demonstrated. When the clinician called to Joel in the play yard, he would respond immediately and rush to the therapy room.

While rocking, thumb sucking, hair twirling, and primitive dancing continued to be a dominant part of his activity pattern there was an observable reduction in their frequency. Brief periods of hypomotility occurred in which Joel was so tranquil that it seemed he might go to sleep while lying on the floor. In these generalized lethargic states he would engage in sucking his thumb or twisting and twirling a lock of hair and limit his rocking to bobbing movements of his head.

An all consuming interest in balloons was evident throughout this period. These would be broken by squeezing or biting them. It seemed that his purpose was not to manipulate the balloons but to shred the broken fragments into as many pieces as possible. In order to accomplish this he often clamped a piece between his teeth and tore it by pulling it with his hands. The natural elasticity of the balloons frequently caused him to be struck as the rubber snapped from between his fingers. He seemed unperturbed by these painful snaps against his face and lips. Chewing the broken bits of balloon was a regular part of this activity and, from time to time, he would swallow some of them.

A unique incident occurred during a toileting episode in the fifth month which revealed the extent of Joel's ingestion of nonfood items. It began with Joel displaying straining behavior preparatory to producing a bowel movement. The clinician guided him to the toilet where Joel independently removed his trousers and mounted the toilet to squat on the seat. The clinician stood nearby, waiting. Joel then reached out, grasped the clinician's hand, and drew it towards his buttocks. After several repetitions of this crude manipulation, it was interpreted to mean that he needed help to wipe his anus. It seemed strange that he was making such a request for he had never been known to seek any assistance before. As it turned out it was not that he wanted his bottom wiped at all, but rather that he wanted help in pulling a shoelace from his rectum which was still entwined in fecal material. In accommodating his need, the clinician discovered that the feces were interlaced with other assorted pieces of stringlike, fibrous material. As it was known that he favored playing with strings, rope, and ribbons and would even shed heavy fabric to gnaw upon, it was clear how so much nonfood material happened to be in his feces. Following this episode whenever Joel would fly into a rage or some other seemingly unprovoked outburst, the clinician could not help but think that some pain in his gastrointestinal tract had overcome him and that in the manner of infrahumans he was wildly attempting to escape from his discomfort by running.

Continuous observations of Joel's language behavior made during this period revealed that his level of functioning was even below that which had been suspected previously. The only spontaneous effort to communicate continued to be through direct manipulation of the clinician. At thirteen years of age, he had not mastered the use of the most elemental gesture communications. His best level of performance was to wave "bye-bye" in response to the verbal direction; however, he was just as apt to shake hands or proffer a kiss as substitute gestures. His confusion in the use of these gestures and the mechanical manner in which he executed them suggested that, at best, he held these low level symbolic associations tenuously. His male attendant had attempted to condition such gestural responses to verbal stimuli but,without daily reinforcement, this type of learning was not maintained.

Responses to verbal directions continued to be rare. When they did occur they were found to be more dependent upon vocal intensity than symbolic content. One example of this was in relation to Joel's regular habit of going into the bathroom for drinks of water, but mistaking the hot water for the cold. The clinician was thus provided with numerous opportunities to verbally indicate Joel's error. In doing so, it was found that unless it was said in a loud, commanding voice he would take the hot water instead of the cold.

In the face of occasional inconsistencies and substitute responses, further attempts to establish the nature of Joel's language comprehension ability supported the notion that he required commanding and authoritatively stated verbal stimuli. Three times during one session the clinician requested that Joel get him a drink of water. Each time he responded by going into the bathroom and taking a drink for himself. As Joel walked from the bathroom the clinician casually asked him, without the use of gesture, to close the door. This was done directly. At the end of the same session he was told that it was time to go; however, in his usual pattern he did not respond until he saw that the door had been opened. Such inconsistencies in response to language stimuli, while confounding, nonetheless did indicate Joel's language problem was primarily in the area of auditory integration. Another isolated example of behavior which deceptively appeared to be a response to verbal stimuli occurred during this period. At the end of sessions the clinician usually said in a commanding voice that it was time to go but, on this occasion, added that Joel should get his coat. Not only did he get his own coat but also brought the clinician's coat and hat spontaneously. This unique response was found to be the product of his attendant's efforts of having Joel get both of their coats prior to going outdoors. When the clinician made subsequent efforts to reproduce the same behavior without using a commanding tone of voice or gestures, it was established that Joel's behavior was not based on comprehension of verbal language but upon the accompanying gestures and the contextual cues within the situation.

No words or word approximations were heard at any point during the entire period studied. Although Joel used a few crude manipulations to express his wants he relied more heavily upon annoyed or angry vocalizations. Often he would behave in a distressed manner, seemingly expecting the clinician or others to attempt to determine what it was that he wanted. On occasions when he was in pain he had no readily comprehensible means of indicating the source of his discomfort. One episode in the fifth month of therapy typified this problem. Joel began by throwing himself to the floor and assumed his characteristic kneeling posture. When the clinician approached him Joel reached out, took hold of his hand and pulled it towards his ankle. It was with this crude gesture that Joel tried to indicate that the laces on his sneakers had been bound around his ankles too tightly and were cutting into his flesh. This had been done by his attendant to ensure that the sneakers would not be pulled off. His long standing aversion for any kind of footwear was still very much in evidence despite his attendant's persistent efforts to condition his acceptance. Accordingly, releasing the tension on the laces did not serve to fully satisfy him.

Experimental introduction of amplified auditory stimuli was frequently attempted during this phase of therapy. This was accomplished by connecting earphones to the tape recorder. It was felt that if Joel would accept wearing the headset and that should the heightened auditory stimulation prove pleasurable, this would provide a pathway which would help him attend by separating the auditory figure from the ground. No difficulty was encountered in placing the earphones on him; however, he wore them for only twenty to thirty seconds and then would pull them off. Attempts were made regularly to have him vocalize while he had the earphones on, but it was to no avail. He would smile broadly and even laugh when he heard the clinician's amplified voice, but no imitations of these sounds were forthcoming. During some sessions he would seek the amplification experience four or five times delighting in the activity, but he did not extend the length of listening time. Thus, the use of amplified sound as a training device did not seem feasible.

Towards the end of the fifth month a pattern of child-clinician interaction became established. At those times when Joel was relaxed the clinician could call to him, "Come!" Joel would respond appropriately and often slide into the clinician's outstretched arms and sit in his lap. While cuddling he might gently finger the clinician's face and hair, but was more likely to suck his thumb and twirl his own hair. This type of close contact, although accepted many times, was never initiated spontaneously by Joel.

Sixth Month (52nd through 60th session)

The stereotypic activity patterns which had dominated the therapy sessions in the early months were ever-present in his behavioral repetoire, but diminished in frequency and intensity during the final month of therapy. Rages and intrapunitive behavior were no longer seen; however, he was still prone to scratching the sores on his face and nose. The trend towards relaxed behavior was in evidence through to the last session. He would stretch out on the linoleum-covered floor and appear entirely at ease for the major portion of many sessions. When he could manage it, BoBo was used as a pillow; however, more often than not its bouncey and slippery characteristics gave Joel unexpected spills.

When Joel was lying on the floor the clinician made efforts to create games which would provide some interaction, for left to his own devices, Joel essentially never initiated contact. One activity which he seemed to especially enjoy was to have the clinician flip him over in a reverse somersault. At times his delight in being manipulated into the somersault was startling in its intensity; while on other occasions, he was only passively acceptant. Each time that Joel did a somersault it was executed with the grace and agility which characterized so many of his movements. A similar ability was observed when the clinician engaged him in a game in which Joel would lie on his back and balance BoBo on the soles of his feet. As long as the clinician maintained the initiative in these activities Joel would participate. At no time did he show any spontaneity in these activities despite his apparent enjoyment while engaged in them.

The only regularly sought play material continued to be balloons. When one was not immediately available he would try to get one from the closet before enlisting the clinician's assistance. After procuring a balloon he would methodically set about to disintegrate it and, unless interfered with, could consume an entire session fondling the broken pieces. At times this was done in the same manner as a person entwining prayer beads between their fingers; and,at other times,by gathering them in his hand to cast upon the floor again and again as if they were dice. An atmosphere of quiet contemplation pervaded the therapy room while Joel was absorbed in this type of play.

When these relatively quiet moods prevailed, the clinician attempted to introduce a variety of tasks which would further establish the nature of Joel's perceptual functioning. Among these were efforts to access his ability to reproduce and/or discriminate a circle, square, or diamond. Through profuse gesture, the clinician first indicated that he wanted Joel to copy the circle. Joel accepted a crayon and paper but did nothing more than scribble in passive compliance. The same indifferent performance followed for the other forms.

Better motivation for a task involving color identification was accomplished through the use of candy as a reward. Four primary colored cups were set before him on the table. Then a candy was placed beneath one of the cups. The cups were rapidly moved about in a random manner so that it was necessary that he demonstrate color recognition by selecting the appropriate cup. This he had no difficulty doing; however, when he was prevented from seeing the placement of the candy and had to depend upon a verbal direction exclusively, he experienced total failure for each of the four colors.

A similar presentation was made using a cup, a box, and a plate. When he was told where the candy was located, he displayed his inability to recognize the names of these common objects by grabbing the clinician in a desperate hugging gesture in order to procure the much wanted candy.

In each of the aforementioned cases Joel's difficulties in integrating language stimuli appeared to be the barrier preventing both the development of an adequate motivation for, and success in, completing the tasks.

A gradual reduction in the frequency and length of meetings led to the termination of therapy.

Case Summaries

Medical History

The identical twin boys were born three weeks prematurely, delivered by low forceps, and placed in an incubator for twenty-four hours. They were bottle fed on a rigid schedule. From the beginning of life a lack of responsiveness to human contact was noted by their parents. When they were eighteen months old it was thought that their problems were accountable to "jealousy" and that they should be kept apart. While no deviancies in motor development were noted intensively rhythmic rocking, head banging, the lack of meaningful play, severe feeding problems, no success in toilet training, and the absence of any speech led, at the age of three, to a psychiatric diagnosis for both children of early infantile autism. At age seven and one half, an electroencephalographic study suggested the presence of brain damage in both boys; however, the psychiatric diagnosis of autism continued to prevail.

Throughout the twins' lives their overall health was excellent with occasional gastrointestinal upsets, associated with the ingestion of many nonfood items, being the main exception.

Previous Therapy

When the twins were three years old each family member received ten months of psychotherapy. No changes in the children's behavior were noted.

Following this experience, the boys began intensive daily psychoanalytically oriented therapy at a center specializing in the problems of preschool children with atypical development. Concurrently, their parents also received treatment. After three years of therapy it was recommended that institutionalization be arranged for both boys.

Residency at Seaview

The twins were among the original group in residence at the inception of Seaview. Seven years of their residency were studied.

As they matured physically they became increasingly more difficult to manage. There were only scant changes in their behavioral repetoire as their infantile adaptations to life persisted in every dimension of behavior. There were no appreciable changes in the quality or quantity of human relatedness, either towards one another, or with the significant others within their environment.

From their first days at Seaview the staff made every effort to maintain a bland environment by structuring the program around the twins' ever-present need to rigidly adhere to an unchanging repetition of their routine. While the sameness that they demanded was not always possible they seemed to have fewer rages when no changes were made in their day to day existence.

Some part of each day of the seven years reviewed for both boys was spent in rocking. This would occur regardless of what was going on around them--whether they were eating, bathing, going to bed, dressing, toileting, or while in craft, music, or educational activity sessions. Mouthing, licking, sucking, chewing, and the ingestion of a variety of nonfood items fluctuated in intensity from time to time, but never were completely absent. Of the infantile patterns of orality, none was more persistent than thumb sucking. Without speech and absorbed in the pursuit of their unique introcentric behaviors, little success was achieved by the staff in socializing either of them.

With the onset of pubescence, Joel began to experience extended periods of violent rages for which an anticonvulsant drug was empirically introduced with success.

Experimental Therapy

Observations and impressions gained during the fifty-seven session with Gene and the sixty sessions with Joel are summarized below:

Nature of the Relationship

While differences in the twins' capacity to relate were negligible, Gene displayed more positive affect with greater frequency than his brother. Gene seemed to have discovered the value of a beguiling smile in winning the favor of adults. This, plus much giggling and laughter, gave him the appearance of being more aware of the clinician as a person; while Joel, on the other hand, displayed a depersonalized attitude towards the clinician throughout the course of contact.

In the absence of thematic content in their play and with constricted expressions of affect, few opportunities were available to reflect feeling, or express empathy, and acceptance. It required several months of therapy before it was established clearly that they were beyond any of the usual forms of human interaction. Their absorption in ritualistic patterns of behavior and their rejection of the clinician demanded that active intervention in their introcentric play be undertaken to establish a wedge in what appeared to be an inpenetrable wall of isolation. Body contact and gross manipulations proved to be the only available basis for interaction as neither Gene nor Joel responded to the clinician's verbalizations. Thus, through the use of nonverbal modes of communication, a tenuous relationship was formed with both boys.

Perceptual Processes

Outlined below are the twins' responses to external stimuli which were observed in both structured and unstructured situations.

Olfactory.--With the exception of their own excreta, neither boy showed any particular interest in sniffing or smelling.

Gustatory.--Inordinately intense oral needs, as seen in their ingestion of a great variety of nonfood materials, suggested a lack of socialization rather than dysfunction in this modality. There were some food aversions and preferences reflecting the operation of discriminatory processes.

Tactile-kinesthetic.--Oral-tactile stimulation was constantly sought. The extensive stimulation received through habitual self manipulation seen in rocking and the all-pervasive need to handle fibrous materials suggested that gratification was obtained primarily in this modality.

Response to Pain.--In the course of the study, there were rare instances in which they were known to suffer specific physical discomfort. By contrast, self-induced pain through head banging or hand biting was extensive. Although their responses were generally vague, there was a suggestion that they had the ability to localize intense pain.

Visual.--While their acuity was not suspected of being defective, it appeared that both boys sought and derived massive quantities of visual stimulation through their incessant rocking. When their visual field was not in motion they would set it in motion. It was as if only moving stimuli could be tolerated. Color and form discrimination were demonstrated indirectly in their use of play materials and in structured situations.

Auditory.--Awareness of amplified sound, particularly music, was observed; however, they failed to utilize most auditory stimuli meaningfully.

Motor Behavior

Rocking and the manipulation of objects with choreiform movements of their hands absorbed most of their waking hours. Their endless absorption in stereotypic activities, combined with a long history of not being able to profit from observation or instruction, gave both boys the appearance of being retarded motorically. This was, however, not the case, for in those natural activities which were by-products of maturation the boys showed no abnormalities. Both twins were swift, agile, rhythmic, and graceful, especially when barefoot. When encumbered by any type of footwear they had a particularly ungainly gait. Although a normal walking gait was seen, their main modes of ambulation were running and a peculiar rocking method of propulsion. Apparent enjoyment for jumping and leaping led to the exercising of these skills so that they became capable of executing spectacular leaps.

As they did not engage in any socially meaningful forms of play, demonstrations of their fine motor skills were observed incidental to such activities as eating and dressing. Here they seemed inadequate because of their lack of socialization rather than any basic deficit in the actual motoric skills needed.

Vestibular Functioning.--Hours spent in vigorous rocking did not disturb the twins' balance mechanisms, thus suggesting a depressed vestibular function.

Linguistic Functioning

Receptive.--The majority of language stimuli, regardless of their source, consistently failed to evoke responses. The few verbalizations which gained their attention and evoked responses were usually those said in loud, commanding tones accompanied by definite gestures. It was found that these responses were dependent upon the contextual cues existing within the situation and tended to be restricted to commands requiring the lowest order of symbol association below the level of performance seen in two year olds.

Expressive.--Examinations of their peripheral oral mechanisms revealed no deviations in structure which would account for their lack of speech.

Extremely primitive forms of vocal behavior accompanied their hyperkinetic and stereotypic activity patterns. When the twins were in motion, rhythmic chantings were heard regularly. The twins' vocalizations were nonfunctional for communication purposes. None of the typical prelinguistic patterns of lalling, babbling, echolalia, or jargon were present. Vowelized vocalizations predominated and were produced from internal stimulation or reflexively. These elemental nonspeech expressions of excitement, joy, or distress, plus gestural manipulations accounted for all of their expressive behavior.

Time and Spatial Orientation

Apart from the fact that both boys needed rigid routines to maintain homeostasis, there was nothing in their behavior which suggested any cognition about temporal relations.

A thorough orientation to the buildings and grounds and a recognition of the permanence of objects indicated an awareness of geographic relations.

Beyond an infant's level of stacking blocks, neither of the twins' play involved sufficient purposeful activity to fully assess their capacity to deal with spatial concepts.

Reaction Time

The boys' total involvement in introcentric needs precluded any formal assessment of the speed of their reaction to external stimuli; however, whatever they engaged in was usually executed with such speed that adults rarely could anticipate their movements.

Learning

Attention.--The twins' potential for learning was profoundly impaired by their perseverations in stereotypic activity which so dominated their waking hours that they were unaffected by the environment. Gaining either twins' attention proved to be a most difficult task especially when auditory pathways were depended upon exclusively.

Their hyperkinesis further interfered with their capacity to attend to any external stimuli.

Imitation.--No participation in imitations of vocal or motor behavior was evoked at anytime.

Memory.--Their recognition of certain people as sources of gratification and their geographic orientation provided examples of the operation of rudimentary memory functions.

Problem Solving.--When frustrated both boys were prone to rages and expected the adults in their environment to guess what it was that they wanted. In a few rare instances, they sought the assistance of any adult available.

Case History of Dennis

Date of Birth: 7/11/52

Family History

The family history was extracted from reports of interviews with Dennis's parents at the time of his diagnostic evaluations.

At the time of Dennis's birth his father was thirty-eight years old. He was a textile designer and reportedly had enjoyed good health. He had been previously married to a woman who had committed suicide. He had had two children by that marriage, and had two children, including Dennis, in his present marriage.

Dennis's mother was thirty-two years old at the time of his birth. She had had a history of hyperthyroidism which reportedly had responded well to surgery when she was twenty-four. Her mother and her grandfather had also had thyroid goiters with hyperthyroidism.

When Dennis was born he had an eleven year old half sister, a seven year old half brother, and a four year old brother. It was interesting to note that this brother, his full sibling, had had surgery for peloric stenosis, a condition that Dennis also manifest.

It was reported that Dennis was a "planned" baby. Because of the economic pressures that the family had experienced, it was only during the last months of her pregnancy that his mother had domestic help.

Birth Record

An examination of the hospital record revealed that the pregnancy was normal; the mother's only complaints were nausea and heartburn. The duration of labor was two hours; the anesthesia administered was Ether; the delivery was spontaneous; and the cephalic presentation was left occipt anterior. The postpartum course was uneventful.

The infant's birth weight was seven pounds, eight ounces and his general condition was reported as good, with no anomalies seen. A circumcision was performed.

Infancy (First-Second Years)

After two weeks of formula feeding Dennis began to vomit. His vomiting was inconsistent as he might retain a second bottle immediately after vomiting. His bowels moved normally and his stools were of normal consistency. Although his formula was changed the vomiting continued, and his pediatrician advised that he be hospitalized for study. Accordingly, when Dennis was three weeks old he had an eighteen day hospitalization.

A review of the hospital records revealed that x-rays of the stomach showed findings consistent with the diagnosis of peloric stenosis and a Fredet-Ramstedt procedure was carried out. There was no information available regarding the type of anesthesia administered. Post-operatively, Dennis was given oxygen for less than a day. In two days some oozing from the center of the abdominal incision was noted. On the fifth day of his hospitalization a firm red area about the size of a pea was noted on his left cheek which was incised and drained. The final diagnosis was reported as peloric stenosis and an abscess of the left cheek.

Dennis's parents reported that following the surgery he ate well on self-demand feedings. There were no feeding problems reported until he was six months old, at which time he became disinterested in food. Weaning was begun when he was twelve months old, and was completed when he was around two years.

Dennis's motor development appeared to be normal according to his mother's report. He sat alone at six months, walked with support at nine months, stood alone at eleven months, walked independently at thirteen months, and climbed stairs at eighteen months. His mother recalled that when he was two years old he fell down a flight of stairs and "cried a great deal"; however, a physical examination detected no injury.

Prelinguistically, his mother reported that he cried very little during infancy. Although his parents recalled infantile vocalizations of coos and gurgles, there was no report of babbling. He indicated his wants by pointing and crying. While he never said "mama" or "dada," his parents reported that he referred to his dolls and animals as "doggie,""pussy cat," and "clown."

Dennis's early pediatrician recalled:

> "During his second year it seemed to me that his physical and mental development were somewhat lagging. His mother complained that he would become quite irritable and 'scream for hours' with no apparent provocation. I realized that she was an extremely emotional individual with a very volatile personality. It was quite difficult to properly evaluate the situation."

In retrospect, Dennis's parents reported that they felt he had developed normally in all areas and seemed perfectly happy and content; however,

> ". . . around the age of two--we can never be sure just when we noticed the difference--he appeared to have stopped developing. It finally dawned on us that he was not smiling, or playing, or attempting to talk. He stopped eating entirely! For the next year and a half he existed on milk alone. Given a cracker or a slice of bread he would lick it but would never bite. The most alarming thing was his complete quiet and lack of activity. He didn't even cry. He would sit on the floor for hours and hours turning a block over and over in his hand. He did not take notice of anyone or anything. He seemed not to see anyone come in or leave the house. Even a shout or a commotion would not result in his turning his head to see what was the matter. You could pass your hand in front of his eyes and he didn't even blink.
>
> "The family doctor felt that there was no cause for alarm. He though Dennis was probably a 'slow developer'. . ."

The pediatrician felt that Dennis's general physical health was good. He had had one or two ear infections without complications and measles with no sequelae when he was two and a half years old.

When Dennis was two years and nine months old, his parents became alarmed by his lack of development and contacted a child psychologist.

Psychological Evaluation

> ". . . On the Cattell Infant Intelligence Scale this child measured at 17.2 months. All the tests on the 12th month level were passed, but an intelligence quotient based on this rating would be 52. . . .
>
> "Impression.--Mental retardation, moron level, at this time. Retesting will be necessary to help with planning for future schooling and handling as his rate of development can be seen after a longitudinal study over a year's time or more. The parents seem to understand what his development may be like. They were warned that he may rate lower as he gets older for a time until he levels off. They are both eager and willing to do what they can to help him develop within his limited capacity."

The parents' response to this consultation was as follows:

> ". . . After testing Dennis the psychologist announced that he was mentally retarded and seemed quite insistent that his case was without hope. She even went so far as to recommend a training school for retarded children in which we might eventually place him. She was so certain that we could not reject her verdict in spite of the fact that the tests themselves seemed to us to be quite inconclusive and cursory.
>
> "About three weeks later Dennis suddenly became alive and began to recite nursery rhymes, to smile, and to notice things around him. From what little we knew of retardation, this seemed to have happened quickly, while at the same time his eating and speech showed no improvement at all."

Urged by a family friend to seek further help for Dennis his parents sought a psychiatric opinion when he was two years and ten months old.

Psychiatric Evaluation

> "The complaint was that he was retarded. He would repeat and imitate speech, but not initiate it, and his mother felt that he did not understand the meaning of a word like 'Mother.' . . . His speech consisted of repeating what others said to him with no spontaneous utterances, and his mother felt that he did not recognize his name. Suddenly he would repeat snatches of songs he had heard months before. . . . He confined himself to soft food and milk, and when through would throw the cup or plate on the floor. . . . Toilet training was not attempted because he did not understand what was wanted. He had several soft movements a day, and whereas formerly he resisted having his diapers changed, subsequently he disliked being wet. . . . Formerly he would sleep soundly in his crib, but when he first came he would wake in the middle of the night and appear hungry for his bottle. He discontinued his daytime nap at two and a half. Following physical examinations there were long periods of crying. He disliked bathing and having his hair washed, and was fearful at beaches when taken far out in the water. Dennis was devoted to a little pillow which went everywhere with him and also a little clown. He played with blocks, trains, and cars, pushing them along. During the day he followed his mother around but appeared detached and disinterested. . . . He was willing to play with his father, but preferred children to grownups and loved his sister and brothers who in turn were affectionate with him. However, there was no attempt to play with them. He did run after his brother, saying, 'I got ya, I got ya.' Despite his throwing everything on the floor, his mother said that he was no disciplinary problem.

> It was thought that there may be some visual dysfunction because he brought everything close to his eyes. The mother was extremely unhappy and upset, and had just entered psychiatric therapy."

This psychiatrist initiated therapy and continued to see Dennis monthly for the next three years. (2:10 - 5:11) The psychiatric observations of his behavior during therapy over the first six month period were as follows:

> "The therapists were always mostly advisory and supportive. Dennis's activity in the office was mainly with small cars which he pushed along the floor with his head on a level with the toys. After a few weeks this close eye scrutinization was less in evidence. He handled things with finger dexterity, but there was no constructive play. Occasionally he hummed. His mother complained of his restlessness and lack of sleep during the day and night. Thorazine was prescribed at bedtime, and a urinary test for phenylpyruvic acid was advised which proved to be negative. The following months his mother reported that he was very irritable and apparently in pain, perhaps from teething, with disturbed bowels. Because of his mother's fatigue, she was urged to put him in the care of his former colored nurse, which worked out well.
>
> "Dennis was seen once during the summer, and he had grown taller. He did not speak much, but it was evident that he had learned many words. His medication was stopped for the time being. He enjoyed his frequent excursions to the beach where he entertained himself by splashing in the water. In the fall his mother reported he was now relating to her and to other members of the family. He had developed a habit of running up to a contemporary, striking him, and then running away. His nights were undisturbed, but he was still wetting his bed. Occasionally he would smile without apparent reason and stare off into space. The parents enrolled him in a nearby church nursery, once a week, and he loved it. He began to ride a bicycle and was active with blocks and trains. Although there was little speech, he hummed to himself.
>
> "During the following year Dennis manifested alternate periods of cheerfulness when he would play happily and show affection for his parents and siblings, and other times when he would cry most of the time. His eating continued to be pernickety and he still wet himself. No definite pattern to his behavior could be discerned--why he cried or laughed. A dentist and an oculist examined him and found nothing wrong. Because of his mother's anxiety, it was decided that a thorough evaluation should be made."

Third Year

When Dennis was three and a half years old he was admitted to a large urban hospital for evaluation and diagnosis over a six day period. The following was the hospital's comprehensive report:

Physical Examination

> "Well-developed, well-nourished, personable male infant, who appeared somewhat but not markedly withdrawn. Patient does not relate well to people and is fairly placid if left undisturbed, but violently resists examination. Head - normocephalic. ENT - not remarkable. Lungs - clear to P and A. Heart - sounds good, regular sinus rhythm, no murmur. Abdomen - negative except for well healed surgical scar. Extremities, Neurological - negative."

Laboratory

> "CBS and Urinalysis: normal
> Protein Bound Iodine: 4.8 gamma %
> Cholesterol: 113 mg.%
> Long Bones X-ray: bone age normal for age
> Skull Films: within normal limits."

Electroencephalographic Report

> "Amplitude high, symmetry poor. Alpha - abundant 14 per second activity. Theta - scattered 4 and 5 per second activity, occasional runs of 6 to 7 per second activity occur. 'Parietal humps' also occur.
>
> "Impression.--Probably normal sleep record."

Psychological Evaluation

> "Formal psychometric examination was carried out, and it was felt that it was not possible to assign a mental age to this child because of lack of response to most of the test items. However, he responded more often and more eagerly to tests requiring a higher level of adaptation. It was noted that his speech was chiefly echolalic, but he did give evidence of comprehension. It was felt that he related to the examiner in a demanding and negativistic fashion. It was noted that he would rarely look into the examiner's face.
>
> "Summary.--Dennis is probably of normal intelligence but the test performance was atypical of any level of development being characterized by extreme withdrawal."

Psychiatric Evaluation

> "In summary Dennis showed the picture of a schizophrenic child. He is only functioning at about 50 to 60 percent of

normal in language and social behavior, but his motor and visual-motor performance are about 85 to 100 percent of normal and preclude constitutional mental deficiency or organic brain disease. A child with constitutional mental deficiency who had this level of language development would not shut out stimuli to this degree, nor would such a child show this type of ambivalence and defensive negativism. In addition, there are no neurological findings which suggest brain damage.

"His recent screaming is most likely due to a resurgence of inner anxiety which is often seen in schizophrenic children at this age, even in the absence of precipitating stimuli. Such anxiety frequently responds to Benadryl. One should expect his development to continue at an uneven rate with accelerations and regressions. The fact that he has developed useful speech by this age is a hopeful sign, even though such speech is still limited. It means that he has roughly a fifty-fifty chance to develop intellectually at better than defective levels, even though he is likely to have other symptoms."

Medical Evaluation

"Child's behavior quite characteristic of schizophrenia - autism. Child relates to people only occasionally. Most of the time he is content to be alone and engaged in repetitive play. Marked loss of affective perception. Mutism and echolalia. Passive response and flaccidity in human contacts. Infantile regression - no bowel or urinary control. Acute bouts of anxiety. Absence of neurological findings and negative laboratory data. Good motor and manipulative dexterity.

"Course.--Dennis seemed to adapt well to the ward, becoming more outgoing and independent. While on the ward it was felt that he would respond to firm, affectionate treatment; although when frustrated he would protest violently; in general, he was fairly tractable and did not create a problem in care on a medical floor.

"He initially fed poorly but it was noted that if he was left alone he would eat fairly well. He began to show an interest in table food rather than in infant soft foods. It was noted that he had a tendency to repeat phrases but that he would sometimes speak spontaneously and appropriately. On one or two occasions he voided in the toilet although predominantly he was incontinent of both urine and feces.

"Conclusions.--It was felt that the child showed no demonstrable organic disease and that his retardation was of an emotional rather than intellectual nature."

Final Diagnosis

"Undiagnosed emotional disorder, possibly childhood schizophrenia. Associated condition - pseudo retardation."

Fourth and Fifth Years

Upon discharge from the hospital, Dennis returned to the child psychiatrist who continued to see him on a monthly basis over the next two and a half years.

Psychiatric Summary

"During the next few months, Dennis showed improvement, in that he was eating regularly and slept during the night. He sat on the toilet, but did not urinate or defecate. While visiting the doctor he was willing to remain without his mother and appeared happy. He was admitted to a kindergarten program for three hours a day. He kissed the baby doll, danced and played the xylophone, and with his brothers he was affectionate. During the summer months his mother reported that his hyperactivity had quieted down and he was busy and happy all day. He would talk to his toys, but not to people. His diet had expanded, and he spoke single words. While with the therapist he would grin while he played with puppets on the floor, and he kissed him.

"When Dennis was 4:2 an ear infection with high temperature for which he received a Penicillin shot disturbed him and he cried a great deal. His pediatrician prescribed Thorazine suppositories. When he came here he wandered from the waiting room to the play room asking for lollipops, and he requested the unwrapping of one. Water play was his main activity, and yellow became his favorite color. His mother thought that his irritable spells were shorter, and said that he had become interested in clothes and recognized himself in the mirror.

"At 4:6 his mother felt that he was just like other children with the exception of his speech. He enjoyed being placed on the toilet although he did not perform. In the office he would draw linear color sketches. Syrup of Thorazine was reduced from twice a day to once a day, then every other day. In nursery school his behavior was satisfactory.

"When Dennis was 5:2 the family moved to an area which was not as isolated and where there were more children. Dennis stayed with his old nurse while his mother went on a vacation and by the time she returned he was toilet trained. He then entered the kindergarten of a public school and for two weeks did well, although the principal took exception when he cried at his mother's departure one day. In school he was not destructive although he was with their neighbors' belongings. During this period he became resentful of his mother and enjoyed seeing pain in others. With his brothers he played amicably.

"When Dennis was 5:6 the school placed him in a special class for retarded children while the parents were away. During some difficulty with the principal he lost bowel control and

> refused to go into the shower when she wanted to cleanse him. He was thereupon suspended from school for the rest of the term. . . ."

This report of the difficulty in school was augmented by the mother's account.

> ". . . We advised the school authorities about his condition, and they took him in on trial. He did beautifully for seven months. He loved school, and looked forward to going. He did not cooperate fully in class but was no trouble, and in every area he seemed to be maturing. Then one day he was not feeling well and he soiled his pants. The principal was called in and she was horrified. She called me to come right down to the school, but in the meantime she tried to put him in the shower in the bathroom. Dennis had never had a shower before and he was terrified. He screamed and kicked, and she never did get him into the shower, but after that he would not go near the toilet either. Every time we took him to the bathroom he shivered with fear, and after a week we had to take him out of school."

The psychiatrist's account of therapy continued:

> ". . . A complete physical examination at this time was negative. He showed hyperactivity when seen here, and for the next few months there was a complete relapse in habit training. His play was with blocks, planes and rockets. He was given Thorazine intermittently. After a visit to his former nurse he expressed a desire to go home and sat on his mother's lap for the first time. He still did not play with other children.
>
> "Because of the situation created at home by the mother's preoccupation with Dennis, it was decided to have him placed in a boarding school. In this way the parents could give the necessary attention to their other children.
>
> "Diagnosis.--Our diagnosis was an emotional disorder of a schizophrenic nature with retardation manifestations. The prognosis is entirely dependent on further observation as to whether this retardation is organic or emotional in nature. We feel that the history of disturbances of the thyroid function on the maternal side and the peloric manifestion point to a definite organic retardation also."

In response to the psychiatrist's opinions, Dennis's mother expressed the following feelings:

> ". . . After quite a few visits and after observing Dennis over a period of time, the psychiatrist advised that he was not retarded but that he was emotionally disturbed. We had never heard the expression before, but he explained the condition assuring us at the same time very little was known about the causes of this condition, and relatively nothing about a cure.
>
> "I mention his frank and honest attitude in this matter especially because I had had previous experience with psychiatrists in the past and their mumbo-jumbo concerning mental conditions in children nearly drove me wild. I was under the treatment of a psychiatrist at the time, and it was his opinion that Dennis was ill because I secretly desired that he be ill on account of deep-rooted guilt feelings concerning my own mother, etc.
>
> "However, Dennis's psychiatrist never fed me any of this psychiatric theory, he made sense to me and my husband, and while he has not been able to accomplish any dramatic cure for Dennis, he has given us a kind of help and reassurance without which I don't think I could have managed over these last three years."

The extraordinary tensions and frictions that this type of child causes within a family were expressed by these parents.

> ". . . The strain of caring for Dennis is beginning to tell on the whole family. I have three other children. We must know where Dennis is every single minute because if he manages to get out of the house without our knowledge he will be out of sight in a matter of moments. If you so much as let go of his hand in the street he is away and gone before you know what has happened. He goes around the neighborhood turning on people's sprinklers and rummaging among the paints and tools in their garages. I am afraid my neighbors are not very understanding, and that they consider him a definite nuisance.
>
> "At home we can never relax. I am always delegating one or another of the children to 'see where he is,' or 'find out what Dennis is doing.' He is fascinated with water, and will run the tap until the floor is flooded. He is not toilet trained, and when the mood seizes him he will urinate in the living room. No matter when he is put to bed he does not go to sleep until one or two in the morning, so that no one in the family gets much sleep as a result.
>
> "Since he does not talk (although we know he can and have heard him do so) we must guess what he wants, and the innumerable trips to the icebox and cupboards are wearing us down. We cannot have company during the day or evening as he will run down from the bedroom, grab drinks and refreshments from guests, and generally be so annoying that we feel it is an

imposition to have guests in the house. This is true of the children's friends as well in spite of the fact that all three of our children have been wonderful and patient with him and love him dearly.

"At this point we have a child who is making very slow but definite progress, and for whom we have great hope, but the care of whom is becoming too much for us. Also the school will not take him any longer. . . . We feel that he needs the association of other children and the kind of around the clock care that we cannot give him in our home without neglecting the other children. We are all tired and tense and quite worn out, and we don't feel that we can do our best for him under these circumstances."

Sixth Through Ninth Years

Admission to Seaview

When Dennis was six years and one month old he was admitted to Seaview for residential care.

In Seaview's pre-admission questionnaire, Dennis's mother provided the following information regarding his status. His weight was forty-two pounds and his height forty-five inches. He was not toilet trained although he would go to the bathroom quite willingly if he were taken. Occasionally he would go to the toilet by himself to urinate, but never to have a bowel movement. Although he was put to bed around eight o'clock he never fell asleep until after twelve. He had no food allergies and loved most all food. He was able to handle a knife and fork well. He was able to dress himself; however, this was a very slow process. The only help he needed was with his shoe laces. His favorite activities were taking walks, riding his tricycle, and playing with his cars and blocks. Although he did not play with other children, he liked to be with them. He was somewhat hyperactive although he had long quiet periods while playing with his toys or looking at picture books and magazines.

Residency at Seaview

The following outline of Dennis's behavior in the milieu of Seaview was compiled from the direct observations of the research staff and an examination of the school records covering a period of three years and five months of his residency. (6:1 - 9:6)

Activities of Daily Living

Eating.--Dennis's eating patterns were highly variable. Unless directed to do so he would not use utensils. He usually had a voracious appetite, grabbing and gulping whatever was available; however at some meals he would refuse to eat or reject certain foods. He often grabbed food from the plates of other children. Apart from the uproar that this created, he might also disorder the table by spilling, dropping, or throwing things about. Unless carefully supervised he would get up from the table and run around the dining room. His shrieks, screams, whines, and raucous laughter, combined with his other disruptive behavior, often created an atmosphere of absolute havoc in the dining room.

Sleeping.--A quiet, undisturbed night was a rare occurrence in Dennis's life. During his first year at Seaview he continued to have difficulty going to sleep and was often awake until twelve or one o'clock. After several months of waking him between seven and eight o'clock in the morning, he eventually established a pattern of going to sleep between seven and nine at night; however, he often woke three or four hours before dawn and spent the remainder of the night screaming and screeching. Nocturnal enuresis continued to be a persistent problem. It was rare when he went three consecutive nights without wetting his bed.

Toileting.--Severely limited by his communication handicap Dennis was not always able to let people know when he needed to toilet. He took great delight in indiscriminately spraying his urine about or playing with his feces. Under strict supervision he eventually learned how to indicate his needs, and with rare exceptions he ceased to soil himself during the day.

Dressing.--With minimal assistance Dennis was able to dress himself; however, he required guidance in identifying his own clothing and constant direction in order to complete the task. Adults continued to tie his shoe laces for him.

Motor Behavior

Most of Dennis's days were spent in hyperkinetic activity. His gait and running ability were adequate but awkward. He expended considerable amounts of his energies running to and fro, utilizing all the available space. Jumping or climbing were effected by his exaggerated fear of heights. When ascending stairs he used alternating feet; but lacked proficiency when descending. He used all the playground equipment but without the mastery one would expect in an eight to ten year old. He was particularly inept at both throwing and catching a ball.

His best performance involving fine motor skill did not exceed the level of nursery school puzzles and kindergarten play materials provided in educational therapy. Because of his emotional lability he frequently exhibited difficulty in simple motor tasks such as pulling the wrapper from a lollipop.

Linguistic Functioning

Tape recorded samples of Dennis's vocalizations were made in the various dimensions of his milieu at Seaview. The most prominent feature of his vocal output was the prolonged periods of shrieking, yelling, and screaming. On occasion, phrases of jargon were heard. These tended to be repeated several times, each time becoming successively softer, starting in a shout and ending in a whisper.

Dennis used words to name objects or pictures. Usually, the naming involved single words, but sometimes the color of the object was also included such as "red desk." The naming would occur spontaneously as he played with the object, or in answer to the question, "What is it"? These words were usually spoken with a rising inflection.

Echolalia was prevalent but fragmentary, involving the last few words of a phrase. Fragmentary phrases of delayed echolalia were also heard such as, "Be quiet you"!

Naming and echolalia tended to be perseverative. Once a word or phrase was spoken, it was repeated several times, loudly at first, then decreasing to a whisper on successive repetitions. Even when words were intelligible, articulatory errors were prominent.

Asocial Behavior

When not consumed with noisemaking, Dennis appeared preoccupied and completely absorbed in his private world. Most of his periods of relative quiet were spent muttering to himself in half whispers or loudly calling out lengthy, but unintelligible, phrases.

Lacking the comprehension of social prohibitions Dennis unabashedly rubbed, pulled, or otherwise massaged his genitals. Water faucets held a constant and absorbing fascination for him. Whenever he could escape the watchfulness of his attendant he would dash to the nearest faucet and turn it on full blast. When this occurred he was punished; nevertheless, water continued to attract and delight him.

Response to Frustration

Dennis usually exhibited rage whenever he was frustrated. The intensity with which he expressed his rage and the rapidity with which it could sometimes be dissipated were startling. It might start slowly with a few cranky whines or with an immediate blast of shrieks. When he was fatigued, as he so often was from lack of sleep, an otherwise inconsequential frustration could precipitate the disintegration of his own limited controls. He would then become so completely absorbed in expressing his rage that it appeared impossible to establish any contact with him. In the absence of ready verbal skills to express his needs, it was difficult to ascertain what his goal might have been or what had precipitated his frustration. On the rare occasions that he could express his need with a word or phrase which he could call forth, he would shout it out as many as forty to fifty times, interspersed with whining or shrieking. Unless his wish was gratified he would become enraged and then abandon his goal or, on occasion, accept a substitute. With varying degrees of intensity, he expressed his anger by kicking, biting, stamping, rolling on the floor, pounding his thigh with his fist, throwing any object in sight, or hitting anyone whom he perceived as his protagonist.

Dennis had no tolerance for physical restraint. Whenever the opportunity presented itself he would run away much to the distress of those who had charge of his care.

Response to Environmental Change

Although Dennis took obvious pleasure in new games, toys, and activities he became readily upset when his regular routine was disordered. He rarely showed any apprehension about visitors, whether children or adults, as he welcomed them with a quick exploration of their pockets for candy or an attempt, through manipulation, to get them to take him outside the building and grounds.

Response to Children

He showed no recognition of the needs of other children. The maximum interaction he experienced with them was usually initiated and directed by an adult. For example, he would share and enjoy seesaw rides with another child but, even under close supervision, he would hop off sending the other child sprawling. A lack of any social awareness was seen in his constant pattern of grabbing play things or food from other children. While he manifest curiosity about the activities of others he could not engage them in socially meaningful play.

When children behaved aggressively towards Dennis he reacted defensively and rarely retaliated. When another child accidentally pushed or bumped into him he would overreact with painful screams.

A prominent feature of his behavior with other children was seen in the unique manner in which he would take hold of another child and bang his cheek against their head.

Dennis showed a remarkable capacity for imitating the stereotypic behavior patterns of the other children at Seaview. He mimicked the peculiar gestures, mannerisms, and vocalizations of those with whom he had the most contact. From one week to the next it was not unusual for him to exhibit an entirely new repertoire of stereotypes.

Response to Adults

He energetically sought and attempted to keep the undivided attention of adults to the exclusion of other children; however, he vehemently rejected any physical manipulation which was not self-initiated. He manifest extensive patterns of negative, attention getting behavior much to the consternation of those who were in charge of his care.

Health and Physical Status

Dennis had the usual upper respiratory infections and gastrointestinal upsets expected in a child of his age. During periods of distress he often exhibited a blotchy red rash about his face and neck.

Immediately prior to the period of experimental therapy, his height and weight were recorded as fifty-three inches and fifty-nine pounds. (9:0)

During the course of therapy he was taken to the local pediatrician because of persistent sores in his mouth and for a general health evaluation. (9:4)

Pediatric Examination

> "He was found to be fifty-two and one half inches in height, sixty pounds in weight. Normal weight for height and age is sixty-five pounds. Eyes, ears and nose were negative. There was an extensive ulcerative infection of the mucous membrane of the mouth, most pronounced on the left buccal membrane. Lungs were clear, heart sounds normal, and no murmurs were heard. No displacement of PMI. Abdomen was soft. There were athetoid movements of both hands.
>
> "Vollmer tuberculin patch test was negative; urine was negative for albumin, sugar, and phenoalinine. Specific gravity was 10/20, and no significant cellular elements were found in the sediment. HGB was 102%, WBC 13,800 with a chamber differential of 72/28.
>
> "The child was placed on Mycostatin 1 cc. 4 times daily in an attempt to overcome what appeared to be a stomatitis of probably fungal origin. Improvement was not sustained on this medication, and a month later a culture of the mouth lesions was taken. The organism found was an alpha streptococcus. I doubted very strongly that this organism was the true pathogen in this case. Consequently no further medication was given. When seen three weeks later the mouth lesions had entirely cleared.
>
> "We are prepared in this case, due to this boy's compulsive hand-to-mouth reaction, to expect periodic, but I hope not too frequent recurrences of this condition. I doubt that his compulsive eating habits represent a vitamin or mineral shortage but none the less, I think it would be well to maintain him on 1 tsp. of Vidaylin daily."

Experimental Therapy

Dennis was a pleasant looking child who was physically well-formed, but lean, for a nine year old boy. There was an athetotic quality in his awkward posture as he stood with his pelvis thrust forward, his head cocked to one side, and his arms gesticulating in space.

Because of his habitual pattern of hyperkinetic pacing while whispering to himself with accompanying gesticulations, he appeared to be hallucinating.

During the sixty-eight sessions of therapy, Dennis's limited speech productions severely impaired the effectiveness of communication. Because of his deficits in language skills he rarely succeeded in achieving his goals. This resulted in an intense emotional lability. He was seen by the male clinician.

Dennis received 45 mg. daily of the tranquilizer Prochlorperazine (Compazine) during the course of therapy.

First Month (1st through 9th session)

The initial session was largely consumed with Dennis's exploration of the play materials in the therapy room. Immediately, he was attracted by the family group of hand puppets which he studied by carefully fingering and sniffing them. He then held them at arm's length and at eye level, scrutinizing them, as if he were near-sighted. When he was able to identify an article of the puppet's clothing he would shout its name. Because of the peculiarities and irregularities in the inflectional patterns of these verbalizations, it was not always possible to establish whether he was making a statement of fact, or asking for the clinician's verification. For example, when he called out "red sweater" it was not clear whether he wanted the clinician to know that he was able to identify colors and various articles of clothing, or that he was seeking confirmation of his accuracy. Dennis would continue to name the item until the clinician responded; at which time he would then whisper the name over and over again. When he was seemingly assured that he knew the object's name and color, he would then pick up another puppet and repeat the same routine. He correctly identified the boy's red sweater but exhibited his limited vocabulary in erroneously calling the female puppet's blue blouse a "blue dress"; the male puppet's brown jacket a "brown shirt"; and the girl puppet's pink skirt a "red dress." It was interesting to note that the puppets were not identified by their sex or their familial relationship.

Having momentarily satiated his curiosity about the hand puppets, Dennis picked up a lump of clay and methodically began to pull, twist, and pick it apart until it was reduced to a pile of minute pieces. Over the next few months, some brief moments of each therapy session were spent manipulating the clay without any modification of this pattern.

During his explorations of the available materials he quickly manipulated the wooden construction blocks, forming a three block structure which he named "tunnel." The first suggestion that Dennis experienced difficulty in spatial relationships was seen as he began to add to his construction. He perseveratively attempted to incorporate a round peg in such a way that it continually rolled off of his structure. After repeated failure, he abandoned this task and again returned to the naming of the puppets' clothing.

Whereas previously he had correctly named the boy puppet's red sweater, he began to manifest uncertainty in his own ability to identify colors. The following excerpt from the first session exemplified Dennis's constant efforts to reassure himself by practising words which he had previously learned.

(Dennis stands fingering the figure of the boy puppet and looking at the clinician.)

D: Red sweater. (Pause) Orange sweater. (A rising inflection indicative of a question is absent; however, the staccato nature of his delivery reflects his tension.)

C: Yes, it is a red sweater.

D: Red sweater. (Then whispering) red sweater, red sweater, red sweater, red sweater........(endlessly)

(Dennis picks up the girl puppet and holds it directly in front of his face.)

D: Red dress. (Pause) Red dress. (The same note of tension is expressed in his voice.)

C: No, it is a pink skirt.

D: (Whispering and mouthing the word) Pink, pink, pink, pink, pink, pink, pink, pink, pink, pink, pink, pink, pink. (Then suddenly in full voice) PINK!

A similar exchange occurred as he carefully examined each crayon while attempting to name the colors that he knew. Dennis invariably exhibited this type of behavior throughout the six months of therapy whenever he was engaged in naming activities.

During this first session Dennis maintained physical distance with the exception of a few moments during which he sat next to the clinician and leaned on him.

The clinician gradually learned to interpret some of the extensive, incomprehensible verbalizations which Dennis produced. Through the maze of misarticulated and often whispered speech, it was found that among his most frequent utterances were echolalic reproductions of prohibitive phrases and sentences such as, "You're a bad boy to run away like that." These were usually heard in the early minutes of therapy and especially when he arrived in an agitated state.

For the next few sessions Dennis devoted a significant portion of his time to a rich variety of play with BoBo, the puncho toy. He poked, pulled, pinched, hugged, squeezed, kissed and tossed it about. He often studied his own reflection and that of BoBo in the one-way vision mirror. He soon discovered that he could pull the plug from the puncho's air valve. As the toy was difficult to inflate the clinician replaced the air valve; however, each time it was replaced, Dennis would pull it out again with the accompanying verbalization, "Smoke goes up the chimney." Although not immediately identifiable as an appropriate association, it eventually became apparent that Dennis was associating the form and shape of the air valve with that of a chimney. Whenever it became necessary for the clinician to set limits, precise verbal explanations combined with appropriate gesture did not deter Dennis from his course of action. Thus, it became necessary to remove the toy. At this juncture in the therapy process, it was not clear whether Dennis was unable to accept the limits set by the clinician, or whether he was severely limited in language comprehension.

When the toy had been locked in the closet, Dennis would momentarily pursue another activity. After a significant delay he would approach the closet door and say, "Take it out." Some problem solving ability was seen when he pushed a bench up to the door in order that he might reach the lock. Unable to unfasten the lock, he then took the clinician by the hand and leading him to the closet door said, "Open the door." After repeated attempts to obtain BoBo's release, he exhibited an often seen demonstration of frustration as he pounded his thigh with his fist. This momentary outburst was accompanied by rapid and forced expirations and inspirations of air which soon became whines and screams; however, as the clinician maintained the limit Dennis finally abandoned the goal.

Only a minimum of limits were imposed on Dennis's behavior. He soon discovered that he was free to express himself in ways which were not acceptable elsewhere in his environment. He had been strictly prohibited from noisemaking activities; yet, he clearly enjoyed shouting, shrieking, and pounding on furniture. When Dennis found that no limits were set on this type of behavior, he began to drum rhythmically on the table with his hands or any available toy, accompanying himself with a boisterous chant. Startling "ear-splitting" shrieks were emitted with a rather obvious delight in his own capacity to produce such noises. The most amazing aspect of his screeches and screams was their suddenness and their contrast with the whispered and subvocally produced words and noises which he incessantly mumbled.

During the early moments of each session, Dennis would make frequent trips to the bathroom for drinks of water. The clinician reasoned that some of his thirst was real, probably the result of the staff's efforts to reduce his water intake; and in part, a reaction to the restrictions placed on him because of his indiscriminate turning on of faucets. Free to use the bathroom as extensively as he wished, Dennis spent increasing periods of time at the bathroom sink. The following excerpt from a tape-recorded session was representative of his vocal output while he was absorbed in water play:

D: A drink of water. (After filling the glass and taking a sip, he raises the glass high above the sink and slowly pours the water out.)

C: You're spilling the water down the drain.

D: In the drain. (Pause, then loudly) Drain!

C: You're putting the glass back in the cabinet. (Pause) And you slam the door. (Pause) Now you have found the nursing bottle.

D: White. (Pause) A white bottle?

C: Dennis knows it is a white bottle.

D: And there's an orange bottle?

(No orange bottle is present; however, the clinician feels certain that Dennis is referring to the yellow nursing bottle which is usually available.)

C: I don't think there's an orange bottle here.

D: (Muttering unintelligibly, he replaces the bottle in the cabinet and begins to repetitiously fling the door open so that it bangs against the wall; then, he slams it shut.)

C: You feel good opening the door and slamming it shut.

(For the next few minutes, Dennis ritualistically fills the glass with water, takes a sip and pours it down the drain. At each step in this ritual, the clinician attempts to give recognition to his pleasure and to carefully describe his actions.)

C: You're taking a little sip of water. (Pause) You like to see water spill down the drain.

D: Spill down the sink. (He then emits a loud shriek and smiles at the clinician.) There's water down there. (Pause) Down there. (Pause) Dennis spilled water down the.......(His voice fades off into a whisper.)

(Dennis carefully opens the mirrored cabinet door positioning it over the sink and spends the remainder of the session pouring water over the mirror, exhibiting obvious delight as it cascades down its surface and into the sink.)

D: Water down the glass. (Then suddenly shouting) Like this!

(Pause) No. Dennis did this. Dennis spilled water down the (pause) down........(Vast shifts in volume and pitch continue.) Put it down like glass! (Quietly and then loudly) Put it down that glass!

C: Dennis has discovered that he can spill the water on the mirror.

D: This spilled the water down the......(fades off unintelligibly) This spilled the water down the (pause). Glass! (Loudly) Dennis spilled the water down the glass! Like ....(unintelligible)

C: Yes, you spilled the water out of the glass, and it went down the drain. That's what happened to the water. You spilled it out of the glass.

D: (His first words are whispered, then he shouts) spilled it out of the glass! Out of the glass! Now Dennis spilled it out of the glass!

C: First, you take a little sip of water. (Pause) Now you pull the door open, and you spill the water down the mirror.

D: (Laughter and giggles)

C: (Recognizing his pleasure) You think that's very funny.

D: (More laughter and giggles)

C: You're having a good laugh.

D: (Laughter continues) Very funny. (Low pitched as he imitates the clinician's voice.) Dennis spilled water down the glass like this. No. (Then loudly) Dennis spilled water down the glass like this!

C: I think our time is just about up, Dennis.

D: Dennis did it. (Pause) Water down......

C: I think we should go now.

D: (As he leaves the room, he continues with vast shifts in volume.) Like this! Dennis did it. Down the sink. Like this! Dennis did it. Down the glass like this. Dennis did it.

During the first month of therapy Dennis developed a particular fondness for the plastic nursing bottles. Immediately upon his arrival he would seek these favored objects either through his own efforts of search, or by asking for them by saying with a rising inflection, "milk bottles?" He would wander about the room whispering to himself, grimacing, and periodically pausing in order that he might fully examine the bottles by alternately extending each of them at eye level and at arm's length. He gave the image of an artist attempting to establish perspective or proportion. The nursing bottles became such an integral part of his play that he was seldom without them. Initially, he found it quite difficult to unscrew the tops; however, after several sessions in which the clinician repeatedly demonstrated and encouraged him, he was finally able to remove them himself.

When Dennis discovered that he had ready access to the bathroom sink and its possibilities for water play, he utilized the nursing bottles as water containers. He ritualistically would fill first the white bottle with cold water, carefully setting it down on the sink, and then fill the yellow bottle with hot water, also being careful to place it on the sink without spilling a drop. His next step was to partially open the door of the medicine cabinet, take both nursing bottles in his hands and slowly pour the water over the medicine cabinet door. As the water cascaded down the surface of the mirror, he would emit squeals of delight and laughter. The moment he emptied the bottles, he would begin this exacting procedure again.

Dennis made additional use of the nursing bottles as drum sticks when he created his distinctive rhythms by tapping them against the edge of the table.

Whenever the clinician offered Dennis the opportunity of selecting toys from the closet, he often gathered up a sack of toy soldiers and miniature military equipment. He would dump the entire contents of the bag; then, carefully order them on the table while naming the pieces which he knew--the jeep and a soldier. When the clinician provided him with the names of various other pieces, he would echolalically and endlessly repeat them, vacillating from full voice to whispers, while simultaneously fingering the toy. In the same way that he walked about the room with the nursing bottles, he would also carry one of the army toys about, whispering its name, fingering it, and viewing it at eye level and arm's length.

During the first month, it became evident that the therapy experience was a positive one for Dennis. Regardless of the circumstances, whenever he saw his clinician he made every effort to go to therapy. His attendants had referred to therapy as "school." Accordingly, when he saw his clinician he usually said, "Go to school." Periodically, he would run from his play group and be found at the door of the therapy room, saying in a pleading voice, "Go to school."

Over the entire course of therapy Dennis resisted the termination of each therapy session. During the final moments of the sessions he would vacillate about leaving the room by rushing back to some favored toy, thus extending his play.

Second Month (10th through 24th session)

Dennis's play and verbalizations provided the clinician with new insights into the nature of his problems. Often during the first few minutes of the session, Dennis was heard echolalically repeating a variety of prohibitive phrases and sentences. It was as if he were trying to reconstruct the entire experience when he repeatedly would shout, "Stay up to your room. Yes! In your room!" He was especially tense as he yelled such phrases as, "If you do that once more......." (the last few words were indistinct as he let his voice fall), or "Better stop that!" and "Shush for five minutes!"

While most of these reproductions were precise restatements of what adults had said to him, some were disgrammatic distortions as seen in his statement "Stay up to your room," which appeared to the clinician as a combination of, "Go up to your room," and "Stay up in your room." Certainly, the unpleasantness associated with the original experience continued to be manifest, but the particular nature or circumstances under which they had occurred remained obscure because of Dennis's expressive dysfunction. Usually the clinician was able to facilitate a shift from his preoccupation with these anxiety provoking episodes to a more relaxed state in which he could become involved with his immediate environment.

The sterility and perseverative nature of Dennis's play patterns limited the clinician's opportunities to reflect or interpret his behavior. Even attempts to gain verbal interaction by describing his behavior failed to elicit responsive speech. While Dennis seemingly attended to many of the clinician's verbalizations, his only direct responses were partial echolalic reproductions of the clinician's words. The following excerpt from a tape recording occurred during a session in which Dennis was involved with practising the names and colors of a group of miniature wooden farm animals. This verbal exchange indicated his awareness of the clinician's presence and his recognition that the clinician could help him to perceive reality.

(Sitting at the table, Dennis holds the wooden figurine of a cow before him and shouts)

D: It's a white cow?

C: Yes, it is a white cow.

D: (Still holding the white cow, he looks at the clinician) A yellow cow?

C: I don't think it's a yellow cow. I think it's a white cow. (Pause) Is that what you wanted to know? (Pause) Where are the cow's horns?

D: (Whispering and muttering unintelligibly to himself, he is seemingly completely unaware of the clinician's statements and question.) Yellow cow?

C: I don't think it's a yellow cow. I think it's a white cow. (Pause) A white cow.

D: (Whispering) White, white, white, white, white, white, white, white............

C: Yes. (Pause) You're practising saying white.

D: (Continues whispering) white, white, white.....

C: You keep saying it to make sure that you know it.

D: (Suddenly shouting) It's a yellow cow?

C: I don't have a yellow cow.

D: (Whispering) Yellow cow, yellow cow, yellow cow, yellow cow, yellow cow..........

C: No.

D: (Whispering) yellow cow, yellow cow. (Then suddenly) It's a red.......(His voice fades. Pause) Drink of water?

C: You'd like to go into the bathroom for a drink of water.

D: (Echolalically copying the tone and inflection of the clinician) Drink of water.

C: Yes. You know where the bathroom is. You want to go in there and you can.

D: (He starts towards the bathroom continuing to whisper) White, white, white, white, yellow, yellow, white, white cow........(When he discovers that the door is bolted he returns for the clinician.)

C: You'd like to take my hand? And pull my hand.

D: (Still whispering) White. (Pause) Drink of water, white, white, white, white.....

C: You can open the door if you want a drink of water.

D: (He makes a feeble attempt to slide the bolt. Quickly frustrated he guides the clinician's hand to the lock.)

C: I'll help you with it. (Pause) There.

D: (Whispering) Open door. (He spends a few minutes at water play in the bathroom and returns to the therapy room, whispering,) White, white, white, white, it's a yite, it's a yite, it's a yite, (steadily increases his volume) it's a yite, it's a yite, (loudly) it's a yite! (Pause. He resumes whispering) white, white, white..... (He has picked up the cow and starts to walk around the room, looks at the clinician) A white cow?

C: A white cow.

D: A yellow cow? (Whispering) A white cow?

C: A white cow? Dennis is asking a question.

D: A yellow cow? Yellow cow.

C: Is it a yellow cow? I don't have a yellow cow.

D: (Whispering) White, white, white, white, white........ (He then picks up the brown horse and carries it about the room.) Brown horse?

C: Yes, it is a brown horse.

D: (Whispering) Brown horse, brown horse, brown horse..... (Then, he returns the horse to the table and picks up the cow) A the white cow?

C: It's a white cow, yes.

D: It's a white cow?

C: It is a white cow.

D: It is a yellow (pause) white cow? (Returning to the table Dennis picks up other animal figures) A yellow cow? And a duck? And a aminal?

C: There is no yellow cow there.

D: Yellow cow, yellow cow, yellow cow............

C: There's no yellow cow in that pile.

D: Cow?

C: Dennis must have seen a yellow cow in a picture book.

D: (Picks up the lamb) Ehyaphant?

C: A what?

D: Ehyaphant.

C: You want to know if that's an elephant. No. That's a lamb.

D: (Picking up the pig) It's a ehyaphant.

C: It's not an elephant, it's a pig.

D: (Whispering) Pig, pig, pig, pig, pig. (Pause) white, white, white, white.........

C: You really want to practise saying white.

D: (He continues to silently mouth the word white)

C: Yes.

D: (Unintelligible mouthing, barely audible.)

(Suddenly he thrusts his arm skyward and says,) That a yite. (Whispering) That's a yite, that's a yite, that's a yite, yite, yite, yite.......(He picks up the horse) A horse?

C: Yes, it is a horse.

D: (Still holding the horse) That is a cow?

C: A cow?

D: A cow, cow, cow, cow, cow.........

C: You want to know the names of lots of things.

D: Yellow cow. (Pause) Yellow cow?

C: We don't have a yellow cow.

D: (Pacing about the room he whispers) yellow cow, yellow cow, yellow cow, yellow cow......(suddenly and loudly) Tha's a yellow cow!

C: Do you know where there is a yellow cow Dennis?

D: It's a white cow. (Whispering) white cow, white cow, white cow, white cow......a cow, a cow. (Loudly) a cow?

C: Yes, that is a white cow.

D: (Whispering) white, white, white, white. Yellow cow?

In order to broaden the base of interaction, the clinician took every opportunity to share or imitate Dennis's activities. At first, Dennis was startled when the clinician joined with him as he banged on the table or emitted his shrieks or squeals. He would cease his activity, momentarily study the clinician obviously puzzled by his behavior and then, suddenly, a broad grin of pleasure would spread over his face. The clinician's imitative behavior served to communicate acceptance and opened the door for many subsequent shared activities.

Balloons were readily available to Dennis as part of the regular play materials, but he was unable to inflate them. Within the boundaries of Dennis's limited frustration tolerance, the clinician demonstrated the blowing technique repeatedly providing him with a visual model. Although he tried desperately to inflate the balloons, he was unable to position the balloon correctly between his lips or form the necessary orifice to prevent the air from escaping laterally. Discouraged by repeated failures, he sought to have the clinician blow up the balloon, either by shoving it into the clinician's mouth or by saying, "Blow it up." This disability of fine motor control had the quality of an oral apraxia and was also evident in his efforts to blow whistles and bubbles. Even though most of the air escaped laterally from his lips, he managed to produce noise with the whistle much to his delight, and some bubbles with the bubble blowing stick.

Dennis's delight abounded when the clinician would provide him with a fully inflated balloon. He accepted the clinician's participation in tossing and batting it in the air. A feeling of closeness was experienced when Dennis would repeatedly seek the active participation of the clinician by dipping the stick into the bubble blowing solution and holding it in front of the clinician's mouth.

(Poking at the bubbles as they floated through the air, Dennis made a verbal association.)

D: Ball?

C: Yes, the bubbles do look like balls.

D: Balls, balls, balls, (then whispering) balls, balls, balls, balls, green ball, green ball, green ball..... (in full voice). Green ball!

C: It looks something like a green ball.

(As the sunlight steams into the room it creates a rainbow in each bubble.) Do you see the rainbow?

D: Rainbow. (Then whispering) rainbow, rainbow, rainbow, rainbow, rainbow, ball, ball, ball, green ball, green ball............

Once provided with the association of "rainbow," Dennis continued over the course of therapy to practise saying the word by endlessly whispering it whenever he was engaged in bubble blowing.

At this point in the therapy process, the clinician had identified the cues enabling him to differentiate the particular verbalizations for which Dennis expected a response from those which he was only practising.

Specific emotional content was noticeably absent from Dennis's play with the exception of a particularly cogent episode which occurred in the bathroom during the second month of therapy. A theme became manifest in his play in which it was apparent that he was trying to work through his fear of darkness. His history was replete with accounts of resistance to sleep and sleep disturbances. He would pull down the window shade, turn out the light, emit a fearful scream, dash from the bathroom into the therapy room, look to the clinician, and reproduce the frightened scream, quickly followed by tense giggling. This routine was consecutively repeated six or seven times. Following this episode, the fear of darkness was never manifest again in his play.

Dennis's multiple misarticulations of consonant sounds (substitutions, distortions, and omissions of s, z, th, sh, w, l, r, and y); his irregular patterns of rate (inconsistencies of speed, rhythm and phrasing); and his rapid shifts in volume (ranging from his maximum output to barely audible mutterings) combined to severely reduce the intelligibility of his voluminous verbalizations. Many of his utterances became recognizable as the clinician adapted to the irregularities and inconsistencies in his speech.

The clinician finally became aware that Dennis often produced excerpts from the theme of the "Mickey Mouse" children's television program. The very moment that the clinician joined with him in singing the Mickey Mouse song, a significant step forward in communication was accomplished. Dennis's glowing delight in the clinician's participation reflected his tremendous satisfaction in being understood. In the ensuing months of therapy, whenever the clinician sang this tune, it readily provided a basis for affective contact as it elicited the same positive response from Dennis.

The physical distance that Dennis had maintained in the early weeks of therapy lessened. With increasing frequency he stood or sat next to the clinician and with occasional spontaneity demonstrated affection with a quick kiss or by banging cheeks with the clinician. This behavior was especially manifest when Dennis and the clinician stood together before the mirror. With his arm about the clinician's neck, he studied and attempted to imitate the clinician's gestures, facial expressions, and sound productions. Within the limits of his short attention span, he was able to crudely imitate a few simple gestures; however, an apraxic quality was seen in his efforts to imitate facial and oral movements. A more sustained interest was maintained when the clinician produced some of the phonemes which Dennis had such difficulty articulating. He was especially fascinated by the bubblings of saliva between the clinician's teeth which occurred with the production of the sounds of "s" and "sh." With his forefinger, he carefully probed the clinician's lips and mouth as if to discover the source of the sounds. Despite his high level of interest, his repeated careful observation and the visual, auditory, and kinesthetic cues provided by the clinician, he was unable to reproduce the sounds accurately. It was possible to auditorily recognize Dennis's presence in the play yard long before actually seeing him by his constant echolalic reproduction of the sounds and words which he was trying to learn.

An analysis of the tape recordings of Dennis's sessions revealed that many of his screams and shrieks during therapy were direct imitations of the background noises which he heard coming from the play yard. During the actual sessions the clinician had automatically filtered out the extraneous sounds and was unaware that Dennis had been attending to these extraneous stimuli. This phenomena of auditory figure-ground disturbance was fundamental in explaining Dennis's disability in acquiring language.

Because therapy provided such an intimate contact, it was possible to gather many examples of Dennis's level of linguistic functioning. The clinician discovered that he appropriately responded to verbal directions under specifically structured circumstances. It was necessary to restrict the words and phrases to simple terms said with a commanding tone of voice and exclusively associated with the activity he was immediately engaged in. He rarely had difficulty complying with the highly conditioned phrases such as, "Close the door," "Take off your coat," or "It's time to go." If extraneous words were inroduced he became readily confused. In situations where he was highly motivated to respond to verbal directions, he could not follow through when unfamiliar words or phrases were used. One such example occurred when Dennis desperately sought a balloon and was unable to locate it even with explicit directions from the clinician.

D: Balloon, balloon, yellow balloon, green balloon. (He searches about the room.)

C: There is a balloon in my pocket.

D: Balloon, balloon, balloon......(Continuing his search)

C: In my pocket.

D: Pocket, pocket, pocket, pocket......(Still searching about the room.)

C: Pocket.

D: (With visible signs of mounting frustration as he continues his disorganized search.) Pocket, pocket, pocket, pocket, pocket, (whispering) pocket, pocket, pocket.....

C: Here it is! (Handing him the balloon in order to prevent a catastrophic reaction.)

It became increasingly clear that Dennis's seeming inability to accept the few limits essential to the therapy structure was largely a function of his disability in language comprehension. He became conditioned and more acceptant of the limits only after they were repeatedly stated by using simplified verbal directions combined with gestures.

Through an expanding awareness of Dennis's problems, the clinician was able to enhance the relationship and increase his level of comfort by structuring the environment so that frustrations were minimized. His overwhelming need for order and structure was cogently demonstrated in a revealing episode involving his favorite toys, the nursing bottles. In his established pattern, he immediately sought the plastic bottles within moments after arriving for therapy. Contrary to his usual response of delight and satisfaction upon finding them, on this occasion he became agitated, screaming and crying. The clinician sought desperately to discover what variable in the situation had initiated this catstrophic reaction. While seemingly remote but of the greatest significance to Dennis, one difference in the environment had occurred. The yellow nursing bottle cap had been interchanged with the white nursing bottle cap. By the simple act of replacing the caps for him so that they matched the color of the bottle, Dennis dramatically shifted from all-consuming anxiety to radiant joy.

Crayons were regularly available among the play materials and provided a focal point of activity. As Dennis had displayed such a great interest in naming and associating colors with the names of other objects, the clinician was able to take advantage of these interests in order to facilitate greater interaction. Using crayons, the clinician created games which Dennis was able to participate in. Thus, it was possible to make certain observations of his level of functioning. He consistently matched colors although he was not always able to correctly name them. Even with the energy he expended in practising names of colors, he never exhibited complete self-assurance. While he showed inconsistencies and errors in articulation he was able to say, "red," "orange," "white," "blue," "yellow," "green," "brown," "black," and "purple." He experienced difficulty in discriminating and naming the shades of colors as noted by his confusion of red, pink, and orange. Whenever the clinician requested that Dennis hand him a particular color, confusions and errors occurred. Consistent with other language comprehension difficulties, these episodes with crayons further emphasized the significance of Dennis's disability in the integration of auditory stimuli.

Dennis enjoyed tearing the wrappers from the crayons so that he could scribble on paper using the flat sides of the crayons. While he willingly attempted to imitate some of the rough drawings and sketches that the clinician made, his only spontaneous production was the drawing and correct naming of an orange pumpkin, including the crude facial parts--eyes, nose, and mouth. His best efforts to imitate the clinician's drawings of simple geometric forms resulted in Dennis's perseverations of crude approximations. His reversals of letter and number forms, whether copied or produced spontaneously, were highly suggestive of perceptual deficit.

While Dennis continued to be preoccupied with shredding the lumps of clay into bits and pieces, he showed some interest in the clinician's manipulations of the Plasticene. When the clinician rolled out long thin pieces of clay he would pick up the strip and break it into many small pieces. Some progress was seen as he occasionally attempted crude imitations of the clinician's models.

Dennis continued to demonstrate a capacity for primitive associations as he identified a large ring of clay, made by the clinician, as a "Hoola Hoop." Similarly, when he was involved with building blocks he would arrange two blocks calling his construction a "lollipop" or a "stop sign." With the latter verbalization he would usually continue, "When you come to the stop sign, you STOP!"

During this month Dennis developed an interest in a large collection of pictures of common objects. In simple black and white line drawings, each card pictured an object familiar to school age children. Having once discovered the box of picture cards in the toy closet, he began to select this material with increasing frequency. At the outset the clinician became aware that Dennis was only able to identify those objects with which he had had direct contact. In the very early phase of his play with the cards, Dennis became frustrated when he failed to identify four or five cards in a row. Consistent with the therapy rationale of minimizing anxiety, the clinician selected only those cards which he felt reasonable confident Dennis would know.

Some of Dennis's behavior patterns had occured with enough frequency so that they could be classified as stereotypic. During every session he would strike his cheek with his fist. Occasionally, he would bang his cheek against the clinician's back or use a rubber toy to tap against the side of his own face. Interspersed throughout all his activities were brief periods in which he would produce a variety of facial grimaces accompanied by vague gesticulating arm thrusts. The manner in which he thrust his arms into the air vaguely ressembled threatening gestures which seemingly accompanied the prohibitive phrases he was uttering.

It seemed that whenever it was possible he would massage his genitals either manually or indirectly by rubbing against the table edge or the puncho toy. It appeared as if his sexual anxiety regarding masturbation was expressed in his absorption with the phallic-like nursing bottles.

Third and Fourth Months (25th through 47th session)

Dennis's intense interest in therapy was repeatedly manifest whenever he encountered his clinician. He would pull and tug at the clinician's arm while restating, "Go to school." With increasing comprehension of Dennis's communicative efforts and behavior, a more affective relationship steadily grew. The consistent atmosphere of the therapy structure made it possible for Dennis to experience comfort and a sense of freedom which he did not know elsewhere in his environment.

Some of his anxieties were manifest in his continued reproduction of prohibitive phrases. As seen in the earlier months of therapy he would arrive muttering or shouting such statements as, "You're going to eat it," "Be good," "You will go to bed without any supper," "Stinky Dennis." His expression of distress and tension was clearly manifest when he was consumed with the reiteration and practice of these punitive phrases. These anxiety ridden periods accounted for some of the erratic and variable behavior which he exhibited from session to session.

Dennis's needs for order and sameness were expressed by his insistence that the therapy room door be closed and that the latch be hooked. He would remind the clinician by demanding "Go shut the door" if it had not been done. He exhibited some difficulty in fine motor skills as he was not always able to independently fasten the hook and eye latch. It was as if he had come to recognize and integrate the limit with regard to leaving the therapy situation. Because he was a habitual "run away" his insistence was especially interesting as it strongly suggested that he sought to establish an external control.

Although Dennis experienced difficulty in functioning independently in many areas of living, he was completely self-sufficient in toilet activities and was able to communicate his needs directly by saying, "Go bathroom."

Dennis's primary mode of initiating active physical contact with the clinician centered about piggy-back rides which he sought by asking for "shoulder rides." Although he demonstrated great delight when involved in this activity, some fear of heights and some awkwardness in his motor abilities were manifest as he clung to the clinician's neck with an iron-like grip. Occasionally, his vocalizations were a mixture of pleasure and fear at which time the clinician, sensing the note of anxiety in his voice, immediately returned him to the floor. Despite his obvious ambivalence, he continued to actively pursue "shoulder rides." It was as if he were trying to acquire the necessary adaptive mechanisms in order to overcome his fear of height and antigravity play.

Dennis's continued interest in the puncho toy provided further examples of his gross motor abilities and the dynamics of his play patterns. His play with BoBo came to include the broadest possible range of manipulations. Dennis was rarely the manipulator of his environment, but rather, the manipulated. Accordingly, his play with BoBo represented a rare opportunity to be the manipulator. He gained particular satisfaction when he finally mastered the technique of standing BoBo on his head, which was especially difficult as BoBo's base was weighted.

While he displayed only a passing interest in the jack-in-the-box, he nevertheless was the only child in the study to demonstrate the expected startle response and an efficient operating technique. His anticipatory behavior indicated that he recognized the tune and knew when to expect the jack to jump out of the box.

An examination of various dimensions of Dennis's play revealed common characteristics regardless of the play media with which he was involved. He exhibited an essential curiosity about the nature and workings of any object, but his curiosity was especially aroused whenever he discovered something new. He became thoroughly engrossed in a toy electric motor which he found in the closet. He rapidly became absorbed with plugging and unplugging the power cord and flipping the "on" and "off" switch. The extent to which he overattended (perseverated) to this new found toy interfered with his comprehension of the clinician's explanations that he would fix the motor's gears which were not turning. His inability to comprehend the complexities of language, and particularly this situation, hampered the clinician's efforts to repair the toy. His perceptions seemed to be limited to the fact that the toy was being taken from him, failing to recognize that he would only be without it momentarily.

As his frustration mounted, he vigorously jabbed his finger at the clinician in one of the few demonstrations of aggression that occurred over the course of therapy. Dennis then assumed a defensive posture indicating that he expected retaliation. The fact that the clinician did not meet aggression with aggression served to communicate his full acceptance of Dennis and his feelings.

While Dennis continued to spend some part of most sessions in water play, manipulations of BoBo, and bubble blowing activities he spent increasing amounts of time manipulating clay. On one occasion an entire session was consumed exclusively with clay. Perseverative phenomena occurred frequently. Upon successfully copying the clinician's model, he would perseveratively reproduce it even though other figures were introduced. After observing the clinician roll out a series of small balls of clay, Dennis spontaneously combined three balls forming an object which he identified as a "snowman." He tried to embellish his form with the addition of appropriately placed ears. This was one of the rare occasions in which he demonstrated some recognition of body image.

With unwavering interest Dennis spent some part of most sessions naming picture cards. When the box of cards was not on the table, he would ask for them by naming one of his favorite pictures, "washing machine," or by calling out "cards." One of the startling features of the card naming activity was his inconsistent variations of volume. Within the moment spent to name a singular card, he was capable of enormous shifts in volume varying from a normal delivery to shouting out its name, or repetitiously whispering it. The type of errors that he repeatedly made were suggestive of a disturbance of cognitive and integrative processes. He gave severely delayed responses, perseverations of successful responses, attention to the part rather than the whole, and echolalic responses. With the onset of fatigue, his level of performance rapidly disintegrated. As would be expected, those pictures with which he had had no personal contact presented a special problem. The clinician had established which pictures he knew and carefully introduced only a limited number of unfamiliar ones. Dennis learned many new words as the result of the cumulative effect of repeated presentations over many sessions.

The following excerpt was taken from the forty-second session of therapy:

(Seated at the table, the clinician presents the first picture--the number four.)

C: What is this?

D: Four.

C: Yes. That is a four. (Presenting the picture of a fork) What's this?

D: A fork.

C: (Presenting a picture of a fireman) What's this man?

D: 's a hat.

C: Well he's wearing a hat, but he's what?

D: 's a man.

C: He's a fireman. (Presenting a picture of a fire)

D: It's a fire.

C: That's right. (Pause. Presenting a picture of a fence)

C: This is a ....

D: House.

C: Well, it's not really a house.

D: ah ffffff (pause) fan. (Whispering) fan, fan, fan....

C: A fence. This is a fence. (Presenting a fan) This is a fan here.

D: Ffffffffaaaaaaannnnnnnn.

C: It's a fan. (Pause. Presenting a picture of feet) What's this? (Long delay) Hmmmm? What's this? (Pause) You have two of these.

D: Two of these.

C: What are they?

D: Feets.

C: Feets. (Pause) All right. (Presenting a tire)

D: That's a tire.

C: It sure is!

D: Tire.

C: Mmhmm. Yes, that is a tire. (Presenting a truck) And this is a.........

D: That's a truck.

C: Yes. (Pause. Presenting a tie) What's this?

D: (Significant delay) It's a strap.

C: No, it's not a strap.

D: It's a tie.

C: A man's tie.

D: Man's tie.

C: That's right.

D: It's a man's tie.

C: Boys wear ties too sometimes, don't they? (Presenting a picture of a table)

D: (Before the picture is completely out of the box) It's a table.

C: That certainly is a table. (Presenting a tent)

D: It's a tent and a room.

C: Well, it's a tent. The whole thing is a tent.

D: (Whispering) tent, tent, tent, tent, tent....(Loudly) TENT!

C: You go camping in a tent. (Presenting a toe) Here's a big........

D: (After a long pause) A feets.

C: Well, its a part of a foot, it's a toe. Very good try. (Presenting a tomato)

D: A peach.

C: Well, if I colored it red it would look like a tomato. (Presenting a turtle)

D: It's a turtle.

C: It's a turtle. (Pause) Now, here's an interesting one. It's a.........(Pause. As this is a new picture the clinician provides the name) It's a bee hive. A bee hive. (Presenting the next picture, a hose) And, this one is a........(Pause) You know this one. You play with that a lot.

D: (Laughter)

C: What is it?

D: Hose.

C: Yes, it's a hose. All right.

D: (Attention wanes as he looks around, grimaces, and begins to practise the "sh" sound.)

C: (Presenting a finger) What is that?

D: Hand.

C: It's a part of a hand. It's a finger.

D: (Getting up from the table, he starts to walk around the room chanting unintelligibly.)

C: Now you feel you'd like to walk around a bit.

D: (Continues to walk around producing unintelligible rhythmic chants and jargon.)

C: (Remaining seated at the table, he presents a picture of a train.)

D: (Glancing at the picture as he walks about) Choo choo train, choo choo train, choo choo train......(Still wandering about and gesticulating with his arms, he perseverates in his naming of a card presented earlier in a loud voice) At's a turtle! That's a turtle! That's right! That's a turtle!

C: Yes, it was a turtle.

D: That's (pause) a turtle. (As he walks about the room he picks up a toy jeep which was lying on the floor) It's a jeep.

C: Yes. That's a jeep.

D: Jeep.

C: Let's look at some of these. (Presenting a brush) Ahhh, here's one you know. You know this one. It's a.......

D: (He returns to the table and pushes into the clinician's lap) Brush.

C: A brush. Oh, that's excellent, excellent. Yes, that's very good. (Presenting a sling shot) You remembered this one the other day.

D: Stick.

C: What kind of stick?

D: A sling.

C: It's a sling....(pause) A sling shot.

D: Sling shot.

C: O.K. (Presenting a picture of dishes) Now, what are these?

D: Plates.

C: Plates. All right.

D: This is a plates. (He gets up again and wanders to and fro, chanting) Choo choo train, choo choo train, choo choo train.. .... (When he looks towards the clinician another card is presented, a flashlight)

C: What's this one?

D: Ah.....a ffffllllaaaashshshshlight. (Chanting the first part of the word)

C: Yes, it's a flashlight. All right.

D: (He wanders about the room chanting with his arms gesticulating. Then, suddenly and clearly) Going to take a shower?

C: You are going to take your shower? Did you have a shower last night?

D: (Long pause while he fingers the air) Going to have a shower? Have a shower?

C: You really like showers. (Pause) Let's look at this. (Presenting a picture of a washing machine) What's this one?

D: It's a........a vacuum........(whispering) cleaner.

C: No. It's not quite a vacuum cleaner. It's a washing machine. Can you say that?

D: Washing machine. ("sh" sounds are distorted)

C: That was pretty good. (Presenting a picture of a pencil sharpener) It's a pencil.........

D: Pencil

C: Pencil what? Pencil........(pause) What do you do to the pencil?

D: It's a pencil sharp...sharp....(the last syllable is not audible)

C: Sharpener. That's right.

D: Sharpener.

C: Mmmmhmmm. (Presenting a picture of a shower)

D: It's a shower?

C: Yes. You like showers.

D: Shower.

C: (Presenting a picture of a sheep) This is a.....sh....sh .....sh......

D: Horse.

C: No. It's not a horse.

D: It's a cow.

C: No. It's not a cow. It's a sh...sh...

D: Doggy.

C: Sheep.

D: Sheep.

C: (Presenting a picture of sea shells) What are these? (Pause) They're hard.

D: Apples?

C: No they're shells. You see......

D: Shells.

C: Sea shells.

D: Sea shells.

C: Yes. (Presenting a picture of shutters. As Dennis makes no response the clinician whispers) shutters.

D: Shutters.

C: (Presenting a picture of a bush) What's this? (As Dennis makes no response, the clinician provides the name) Bush.

D: Bush.

C: (Presenting a picture of shoes) And, what's that?

D: (Whispering) What's that? (Loudly) Shoes.

C: (Presenting a picture of fish)

D: (Whispering) What's that? (Loudly) It's a fish.

C: (Presenting a picture of a shirt) You really want me to say, "What's that?"

D: Sweater.

C: That's not a sweater. It's a.....you're wearing one. (Pause) What is it? (Long delay) It's a shirt.

D: Shirt. It's a shirt.

C: (Presenting a picture of a window shade) Here's a window ....

D: Shade.

C: Shade. Very good.

D: Window shade.

C: (Presenting a picture of a toothbrush) It's a........

D: Win....dow. (Pause) Window. (Pause) Window shade. (Pause) It's a tooth brush.

C: Yes, a tooth brush. (Presenting a picture of a ship)

D: A boat.

C: Yes. It's a big ship. (Presenting a picture of a gold fish bowl) Here's a gold fish........

D: Gold fish.

C: Bowl. Gold fish bowl. One more. (Presenting a picture of a wishbone) We get that when we eat the chicken. We get a wish.......

D: Bone.

C: A wishbone. That's right. Very, very good. May I give you a kiss?

During this period of therapy, the clinician was able to innocuously present Dennis with activities which were informative with respect to his perceptual functioning. It was possible to gain some insight into his tactile kinesthetic functioning by using favorite toys in an impromptu game. As he sat in the clinician's lap, the clinician covered his eyes and asked him to name a toy which had been placed in his hand. It was startling to discover that in this sensory modality Dennis readily became confused and disorganized and was only able to give associative or substitute responses. Dependent solely on his kinesthetic senses, he failed to recognize the whole and named the parts, calling out "wheels" for the jeep. Probably based on an association of similar plastic materials, he called the whistle a "truck." He demonstrated his motivation in making substitute responses when he was unable to evoke the correct name for a particularly familiar toy, the balloon, calling it a "handkerchief." His level of performance increased significantly when he was allowed to see the collection of items prior to the covering of his eyes and their individual presentation.

In a game which required the sorting of the geometric forms of a circle, square, diamond, and star, Dennis correctly named them and was able to group them in piles according to their shape. Similarly, he showed form recognition by identifying some letters of the alphabet; however, the only word which he could identify with any assuredness was his first name.

Dennis selected some small, uniformly shaped plastic sticks from the toy closet to use as drum sticks on the table. Utilizing these sticks, the clinician introduced games in order to present abstract forms. Dennis experienced success by copying abstract designs using two sticks; however, he failed to imitate any designs involving three sticks with the exception of the already familiar triangle. For those designs he copied and named correctly, he exhibited the need to reproduce the abstract design as something concrete. The forms were repositioned by rotating the entire design while maintaining the basic relationship of one stick to another so that they became representations of letters of the alphabet.

Through the use of crayons, the clinician was able to explore the possibilities of other dimensions of Dennis's expressive ability. In order to stimulate his interest, the clinician drew pictures of objects that were familiar to him which he took great delight in naming. Although he enjoyed watching the clinician draw, he showed no interest in participating in this mode of symbolic representation.

It was found that although Dennis did not always understand what he heard, his auditory acuity was not suspect. Adequate hearing was demonstrated by his echolalic responses to the clinician's whispers. At this point in therapy, Dennis's echolalic reproductions began to consistently reflect the clinician's inflectional patterns and variations of volume and pitch.

Fifth Month (48th through 60th session)

Dennis maintained a continuing interest in balloons. He delighted in participating in the game of trying to keep the balloon in the air. In spite of the clinician's continued efforts to help him inflate balloons, he did not acquire this skill over the course of therapy.

His stream of vocalizations continued to pervade all areas of his activity except his play with clay. His energies were more directed in his complete absorption in manipulating the clay. He was significantly quieter both in vocal output and random activity.

Following the model introduced by the clinician of incorporating other materials in the manipulations of the clay, Dennis began to use wooden blocks, a toy mallet, and a rubber knife in richer, more varied play. It was interesting to note that he used the toy knife ambidextrously to cut the clay. He made associative responses to the shape and texture of his cuttings by calling them "cheese" and "potatoes."

At this point in the therapy process major portions of most sessions and occasionally entire sessions were consumed with various activities involving the picture cards. It was found that in any type of activity in which Dennis had the possibility of using or acquiring some language skills his interest, attention, and motivation were extremely high. He had experienced extensive positive reinforcement through a long series of success experiences and copious amounts of praise from the clinician. It was recognized that his delight in these activities during therapy was, in part, a reaction to the negative and punitive responses to his verbalizations occurring elsewhere in his environment.

While he had demonstrated a fair degree of proficiency in naming most of the picture cards he was quicker and more accurate in his naming of the actual objects. He took particular glee in walking about the room with the clinician, touching and naming everything in sight. Even though he was absorbed and highly motivated in these activities he continued to exhibit his basic language deficit as he made associative errors.

The clinician had come to recognize that he could facilitate Dennis's language learning through carefully structured presentations. Significant progress was made with the incorporation of the techniques of aphasia therapeutics by maintaining a structured presentation throughout the necessary repetitions, and by removing extraneous stimuli thereby lessening figure-ground problems. Following these principles, new variations in the way in which the cards were presented were introduced. Dennis was verbally directed to select a specific card from a small group arranged on the table. He responded accurately as long as the request was limited to one picture; however, when he was asked to give the clinician two or more pictures he was unable to retain the multiple features of the task. After Dennis correctly selected the first picture in a series, his confusion and distress indicated his awareness that his performance was incomplete.

Unlike his difficulty with auditory memory span in the multiple task-oriented situation, Dennis readily echoed eight to ten word sentences spoken by the clinician.

During this period and continuing through the final month of therapy, Dennis manifest special interest in the Playskool shoe lace trainer which he had found in the toy closet. He began to exhibit a repetitive performance as he would move away from the clinician to a distant corner of the room and methodically remove the shoe lace, simultaneously shouting out, "Don't you dare pull that out!" The moment he finished removing the lace, he would return directly to the clinician and request, "Lace it up." During the ensuing weeks, with some encouragement and direct assistance from the clinician, Dennis was able to learn how to relace the toy shoe but continued to retire to a far corner before removing it. He finally came to recognize that the clinician accepted his need for this activity and it was no longer necessary for him to maintain distance when he wanted to unlace the toy or his own shoes. He seemingly had worked through the trauma associated with this activity.

Sixth Month (61st through 68th session)

A transfer of learning occurred when, in the final month of therapy, Dennis learned how to lace his own shoes. Although the clinician repeatedly demonstrated step by step the method of tying the lace, Dennis was unable to learn the entire tying procedure within the brief time remaining; however, he was able to tie the first knot.

Dennis's involvement in the therapy relationship was clearly manifest in his continued, sudden, and unexplained appearances at the therapy room door. The change from the little boy who maintained a cautious distance in the early phase of therapy to one who actively sought close physical contact was striking in its contrast. It was clearly established that the nature of his experiences immediately preceding his arrival for therapy determined the quality of his emotional status. On one occasion during this final month, Dennis stormed into the therapy room screeching, yelling, and crying copiously. The first ten minutes were spent in fragmented, disorganized, hyperkinetic turmoil. As it was impossible for Dennis to verbally explain or give any direct indication just what precipitated his great distress, the clinician intuitively assumed an affectionate, protective role. His distress was gradually dissipated as he accepted the offer of the clinician's lap where he remained cuddled for the rest of the session.

His general delight with his experience in therapy was reflected in the new exuberance with which he bounded about the therapy room with a high-stepping gait. This was in marked contrast to the constrained behavior he had exhibited during the early months of therapy.

As Dennis's behavior continued to suggest perceptual dysfunctions, the clinician took advantage of every opportunity to interject into the play situation simple perceptual and psychomotor tasks. By presenting a lighted match behind the one-way vision mirror, an observer recorded Dennis's capacity to follow the moving light. After attempting to locate the light source within the therapy room, he visually followed the movement of the light. His efforts to identify the source of the light indicated that he had conceptualized the function of mirrors.

From time to time, Dennis played with the plastic sticks. This activity afforded the clinician an opportunity to assess a facet of the functioning of Dennis's visual memory. While he exhibited reasonable success in copying abstract, two stick designs with the model present, he was unable to visually retain or reproduce the designs for memory.

During the final phase of therapy, an effort was made to explore possible ways of developing techniques for evaluating various factors of his perceptual functioning. Throughout the course of therapy, Dennis had repeatedly manifest extreme distractibility for extraneous auditory stimuli, to the extent that in the midst of therapy sessions, while seemingly absorbed in play, he would imitate the other children's shrieks and screams which emanated from remote parts of the building or grounds. This distractibility was viewed as an auditory figure-ground problem and, accordingly, the clinician attempted to find out whether Dennis's capacity to attend would be improved if he were to wear earphones and receive amplified sound. This was not possible because Dennis vehemently rejected earphones.

It was well established that Dennis, like the other children in the study, was especially fond of sweets. Therefore, candy was used to motivate him to perform simple, perceptual tasks. Four plastic cups (red, blue, yellow, and white) were presented and Dennis was allowed to see a piece of candy being placed under one of the inverted cups. They were then mixed up by randomly moving them about on the table. Dennis had no difficulty following the movements of the cups and locating the cup under which the piece of candy was hidden. He indicated a memory for color by rapidly and correctly locating the hidden candy when he was prevented from viewing the cups as they were being moved around. He repeatedly experienced failure when he was prevented from seeing the candy being placed under a specific cup and had to depend solely upon language comprehension in order to locate the hidden candy. Consistent with his usual response to frustration, he abandoned the task. The clinician quickly reintroduced one of his favorite activities thereby dissipating the distress which accompanied his frustration.

Therapy was terminated by gradually reducing the frequency of the sessions.

Case Summary

Medical History

According to the hospital records Dennis's birth was normal. When he was three weeks old, he had an eighteen day hospitalization for the surgical repair of peloric stenosis.

A history of persistent eating problems, poor physical development, lack of speech, and an increasing disinterest in the world about him prompted his parents to seek help. Rejecting a psychologist's evaluation of mental retardation (moron level), the parents sought psychiatric help. After three years of monthly visits, the psychiatrist concluded that Dennis had an "emotional disorder of a schizophrenic nature with retardation manifestations."

When he was three and a half years old, a comprehensive hospital evaluation concluded that "his retardation was of an emotional rather than intellectual nature." He was considered to have an "undiagnosed emotional disorder, possibly childhood schizophrenia." Clinical and laboratory studies (electroencephalogram, blood, and urine studies) did not demonstrate organic disease.

Previous Therapy and Educational Experience

Over a period of three years, a psychiatrist observed Dennis monthly and provided advisory and supportive counselling for his parents.

He spent four months in a special class of a public school but was dismissed because of his unmanageable behavior.

Residency at Seaview

When Dennis was six years and one month old he was admitted to Seaview.

Three years and five months of his residency were studied and revealed that he continued to have prolonged episodes of screaming, irregular eating patterns, and sleep disturbances. In the areas of self-care he required constant supervision.

Hyperkinetic behavior permeated all of his activities. Whenever he had the chance he would run; not only to get away, but for the sheer delight of running.

He spent considerable portions of his waking hours preoccupied with the whispered practice of a variety of words and phrases. His muttering and pacing, accompanied by vague gesticulations gave him the appearance of being detached and disinterested in his environment. His sudden outbursts of loud chanting and rhythmic pounding on tables created a bizarre picture.

Experimental Therapy

Observations and impressions gained during the sixty-eight sessions of experimental therapy were as follows:

Nature of the Relationship

The efficiency of communication between Dennis and the clinician was decidedly impaired by Dennis's reduced language comprehension and his limited responsive speech; however, by lessening the demands for language comprehension through the use of simple sentences incorporating only the phrases which Dennis knew, the clinician increased verbal interaction and the sharing of activities which formed the basis for the growth of the relationship. Dennis's comfort and increased willingness for interaction was furthered when the clinician became familiar with the significant meaning of his otherwise irrelevant, repetitive, and incomprehensible verbalizations. The clinician's acceptance of Dennis was communicated by direct imitations of his behavior and through positive reinforcement of any of his goal directed activities. By maintaining a constancy of acceptance and permissiveness, an affectionate relationship flourished.

A positive attitude toward the relationship was seen in Dennis's insistence to be taken to therapy and by his active pursuit of physical contact with the clinician. He used the security of the relationship to actively test his perceptions of reality.

Perceptual Processes

Dennis's responses to external stimuli which were observed in both structured and unstructured situations were outlined as follows:

Olfactory.--Dennis's regular use of this modality reflected not only his lack of socialization but also appeared to function as a supplement to other perceptual processes. When confronted with unfamiliar objects he would sniff them.

Gustatory.-- Pronounced food preferences and aversions suggested that he had adequate discrimination in this modality.

Tactile-kinesthetic.--While trying to evoke the name of an object Dennis usually touched, fingered, and manipulated it. He often traced the form of the object he was playing with as if he wanted to commit its outline to memory by feeling it. The manner in which this was done suggested that this modality was used as a supplement to visual and auditory processes.

Response to Pain.--Dennis gave every indication that he was capable of localizing the source of any bodily discomfort; however, he overreacted--his responses being disproportionate to the intensity of the stimuli.

Visual.--Dennis's acuity was not suspect. He had a long-standing habit of viewing objects at arm's length and eye level. It was not established if this behavior was the result of near-sightedness, part of his stereotypic behavior, or the imitation of adults.

He was able to discriminate colors. He reproduced some elementary geometric designs and letter forms; however, reversals and rotations were manifest in his reproductions of number and letter forms. Visual figure-ground discrimination posed a constant problem.

Auditory.--Dennis gave evidence that he had adequate hearing, although he did not always attend to auditory stimuli. An auditory figure-ground disturbance was manifest in his over-attending to extraneous noise. Paradoxically, he displayed an extraordinary interest in imitating speech and environmental sounds. His imitations of the pitch variations in the speech of adults or the screams of other children indicated a capacity to discriminate pitch. Although he was not always successful, he attempted to reproduce the phrasing and rhythm patterns of the speech he heard.

Motor Behavior

Dennis was poorly coordinated and retarded in gross and fine motor development. His disability in language comprehension prevented him from understanding instruction for rudimentary physical activity; therefore, he was limited to skills which had evolved naturally. He exhibited a wide array of what appeared to be aberrant and seemingly purposeless bodily movement in a hyperkinetic overflow of energy; however, many of these gesticulations came to be recognized as his imitations of the gestures of persons within his environment. His hyperactivity, combined with his low frustration tolerance and gross insecurity, further hampered the development of his motor skills.

His poorly developed fine motor control was seen in his crude use of play materials. A dyspraxia of the oral mechanism was noted in tasks requiring fine motor control.

Vestibular Functioning.--There was no evidence to suggest vestibular dysfunction.

Linguistic Functioning

Receptive.--Dennis was significantly handicapped by his lack of language comprehension. He clearly displayed his disability when he attempted to follow directions or comply with the wishes of adults, but failed even with great motivation.

He was able to respond to many highly conditioned words and phrases as long as they were said in the same manner in which he had originally learned them. Also, it was necessary that they be concrete, immediately related to what he was doing, and free from complex, lengthy, or abstract constructions. It appeared that while he was occasionally responsive to the speech of adults in the behavioral sense the specific words did not have meaning in the sense of representational symbolism. Both the contradictory phenomena of perseveration (overattending) and distractibility were essential parts of his behavior and further interfered with his integration of words spoken to him. He repeatedly manifest problems for the more abstract symbolic processes needed to deal with numerical concepts and written or printed materials.

There were times when he would abandon his efforts to integrate language stimuli. Perhaps more than any other factor, this inability to fully comprehend what was said to him contributed to his periods of isolation and withdrawal.

Expressive.--An examination of his peripheral oral mechanism revealed no structural abnormalities.

Dennis expended considerable energy in trying to make himself understood. He demonstrated some rudimentary conceptualization for absent objects and situations associated with his need for food, water, and toileting. His spontaneous utterances were primarily limited to naming common objects and the delayed echolalic reproductions of adults' phrases. As he was unable to structure words, phrases, or sentences to express his own feelings he was restricted to expressing himself through conditioned echolalic reproductions. These delayed echolalic utterances often became disgrammatic, jargonized, or garbled chantings. Many of these distortions were the product of his misarticulations of consonant sounds and inconsistent patterns of volume, pitch, and rate. Unable to monitor his own vocalizations his endless practice reinforced his own errors.

Dennis came to rely heavily upon gross and specific manipulations of adults rather than the use of words. Although he demonstrated that he knew the names of many common objects, often in his anxiety to express his need, he was unable to evoke the word or phrase appropriate for the particular situation. His expressive capacities were further impoverished, lacking in the symbolic representations of drawing or writing.

Although his diffuse efforts were not always comprehensible to those around him, he persisted by using whatever expressive abilities he had. When his verbal efforts to communicate were not immediately interpreted and responded to he would whine, cry, or scream--decidedly inadequate; nevertheless, communicative.

Time and Spatial Orientation

The recognition of time concepts were not seen in any of Dennis's behavior. He was, of course, unable to tell time and did not utilize time cues from events in his environment.

A geographic orientation was demonstrated with his appreciation of the permanence of objects. He had difficulty in distinguishing between the permanent properties of objects and their transitory spatial relationships. This was seen in the difficulties he encountered in trying to combine building blocks in space so that he might obtain a functional structure.

Reaction Time

In all but a few areas of performance Dennis showed a depressed reaction time. While overattending to a stimulus he was unable to shift his focus rapidly enough, presenting extremely delayed responses or no response at all. At the same time heightened distractibility for extraneous stimuli was operant. There were times when he was highly motivated and focused upon personally meaningful stimuli when his responses were rapid. He was very quick to get out of harm's way.

Learning

Attention.--In activities where Dennis had previously experienced success, he was well motivated and could sustain attention. His incessant overattention to specific detail and minutiae impeded the development of the ability to synthesize separate elements into a meaningful gestalt. Once his course was set in a particular activity it was very difficult for him to shift to something different. His problem was not one of attending, but one of overattending. His attention was facilitated by carefully structured presentations of specific stimuli and by minimizing all extraneous stimuli.

Imitation.--Dennis's primary mode for learning was through the imitations of the verbal and nonverbal behavior of the adults and children in his environment. He echoed not only adults' words but their intonational patterns as well. He indiscriminately reproduced many of the stereotypic behaviors of the other children. While his imitations sometimes lacked precision he nevertheless took observable delight in his own capacity to reproduce the vocalizations and mannerisms of anyone with whom he had prolonged contact.

He became confused and less efficient when attempting to imitate sequences of actions; however, he gave close approximations of some lengthy statements made by adults.

Memory.--Certain dimensions of auditory memory were intact as exemplified by his reproductions of material heard months and even years earlier. He constantly practised saying things he had heard; thus, they became conditioned through his own reinforcement. He depended heavily on the reauditorization of stimuli for memorization and recall. However, this perceptual centering of performance was deleterious to learning as he was unable to synthesize this endowment with other perceptual processes.

Distortions of visual memory were seen in his reversals and inversions of numbers, letters, and designs. Successful demonstrations of visual memory function were dependent upon the extent to which they received reinforcement.

Problem Solving.--Many opportunities to observe his problem solving ability occurred in relation to his play. His approach to problems was usually limited because of his low frustration tolerance and perseverative behavior. When he was thwarted in the realization of his goals, he became so consumed in his frustration that not only possible alternative actions, but the goal itself became obscure. Despite the fact that his endless hours of screaming were viewed as unacceptable behavior and received only negative responses from those who were in charge of his care, he did not learn other ways to circumvent the obstacles preventing the attainment of his goals.

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Case History of Peter

Date of Birth: 2/16/52

Family History

At the time of Peter's birth, his father was fifty-two years old. He was a practicing psychiatrist, born and trained in France. He had had one previous marriage with no children.

Peter's mother was born in the United States, was a housewife, and had two years of college education. She was twenty-three years old at the time of Peter's birth. There were no siblings.

Birth Record

An examination of the hospital record revealed that the pregnancy was an uneventful, thirty-nine week term. The delivery was induced. The duration of labor was twenty-five hours and thirty-four minutes. The presentation was right occipt anterior with low forceps. There was no information available regarding anesthesia. No postpartum complications were reported.

The infant's birth weight was seven pounds, two ounces, and he was described as a normal appearing male infant with no anomalies seen. A circumcision was performed. Upon discharge his weight was seven pounds, seven and one quarter ounces.

Infancy (First-Second Years)

For the first six weeks Peter was breast fed. His mother reported that he was "colicky." At six weeks he was weaned to the bottle and a rough schedule was followed. Cup feeding was introduced at eight months and, with the exception of a bedtime bottle, weaning was completed at one year. The bedtime bottle was discontinued at a year and a half. Peter's first tooth appeared at nine months.

During his first summer when Peter was six months old, sleep difficulties accompanied by persistent episodes of diarrhea were noted.

Peter's mother reported that his motor development followed a normal course. He turned over at five months, sat without support at eight months, walked with support at twelve months, stood without support at thirteen months, walked independently at fourteen months, and climbed stairs at fifteen months.

Asocial behavior patterns were noted early. His mother reported that he was "not a cuddly baby." At six months he started to rock himself to sleep at bedtime and at eight months it was necessary that his bed be rhythmically shaken to induce sleep.

The prelinguistic patterns reported by his mother included different cries for pain and hunger, responses to loud noises, the raising of his arms to be picked up, and a variety of vocalizations and babbling. During the second year his speech developed to include the expressions of "Dada" and "Mama" used appropriately. Eventually, phrases such as "All gone" were produced, but he seldom said three word sentences. He was able to give his name upon request, sing a number of songs and recite rhymes, as well as count from one to ten. When referring to himself he used the pronoun "I." Peter spoke some French words to his father and

English to his mother. Indications of hearing were noted in his responses to environmental sounds and by attending to "no" and to his name.

Third Year

It appeared to his parents that Peter was developing quite normally. They reported that he clearly stated, "I will never wet my bed again," and from that point on he stopped, refusing to wear diapers thereafter. He was perceived as being exceptionally clean while eating with no digestive troubles of any kind. He was able to climb to the top of a slide and come down with enjoyment. During this period Peter became interested in puzzles and enjoyed imaginative play with blocks.

When Peter was three years and two months old, he presented sudden vomiting followed by a slight fever and runny nose with an infrequent hard cough. The pediatrician's diagnosis was a banal cold; however, the condition persisted. He was afebrile. As he presented two whoops, it was thought that he might have a mild whooping cough. During this period he often slept during the afternoon and remained awake at night until two or three o'clock in the morning. Accompanying this illness he began to rock during the daytime. In the ensuing weeks following the "whooping cough" episode, he began to exhibit peculiar behavioral traits, showing a violent antagonism to an occasional passer-by. His parents reported that he became uncontrollably dependent upon his mother and seemed dazed and without energy. He would follow, with docility, wherever he was led. Fits of screaming and crying for no apparent reason occurred. There were several episodes where Peter would run to his room screaming "No! No!" and be found rocking on the floor, occasionally urinating and having an erection. His speech production diminished to the point where words and phrases were spoken infrequently. At night, laughter and incessant rocking accompanied his irregular sleep pattern. He slept during the day.

When Peter was three and a half years old, acute tonsillitis with a high fever, accompanied by a state of confusion lasting about two hours, occurred. As the weeks passed the rocking and poor sleep patterns continued and speech disappeared almost completely. Because of the excessive size of his adenoids and frequent colds, Peter was hospitalized and had his adenoids removed. After the adenoid operation his mother reported that he clearly said, "I want some water," and continued to use simple sentences for the next few days. This rapidly disappeared and was replaced by echolalia.

During the next two months Peter's problems became intensified. He was often seen closing his eyes and rubbing his forehead while rocking, screaming, and crying. He appeared quite confused and would follow a stranger as if he were his father. He began to stare and grimace at people.

Fourth Year

Peter's parents recalled that during his fourth year one evening he rocked, closing his eyes, rubbing his head, and crying, giving the impression that he suffered from a violent headache. He was seen immediately by his pediatrician. The syndrome was described to a friend, a child psychiatrist, who advised that he be hospitalized at once. He was admitted to a large urban hospital for evaluation and diagnosis when he was four years old.

Pediatric Evaluation

> "Well-developed, well-nourished boy walking on tiptoe, but able to walk on sole of foot. Poor comprehension, smiling inappropriately and with some distrust, easily disturbed by sudden motions on the part of the examiner. Good strength and configuration; walks on toes, heel cords do not seem tight; many motions jerky; clasp very firm. Neurological: hyperactive, deep tendon reflexes both legs; moderate increase in arms; plantar reflexes down three times."

Neurological Evaluation

> "A four year old boy who was said to be a very normal child up until about the age of three years when he had a very questionable bout of whooping cough. This was mild, whatever it was. Sometime after this the patient began to lose his excellent speech and began to communicate by simple phrases and single words. After awhile it became evident that his comprehension decreased. Now his mother believes that he can only understand at times.
>
> "For about eight months or more he has had the habit of rocking on all fours. This will go on for an hour or more, but can be interrupted at any time by his mother.
>
> "For about three to four months he has occasionally been putting his hand to his eyes and screaming 'as though he had a headache.' In addition to losing his speech he had begun to wet and soil again. His table manner which were once very good have also deteriorated.
>
> "Neurological Examination.--As seen now one gets the impression that this child is not in contact with his environment, yet he smiles readily, but inappropriately. Nothing that I said to him brought about an appropriate response either verbally or performancewise. He did perseverate frequently, repeating commands given or statements made.
>
> "The child appears likeable and friendly and one for whom I had a great deal of sympathy. He seems to flit about the room rather than walk, frequently on his toes. No other disturbances of gait were noted. His cranial nerves appear normal. I also got a good view of his right fundus which was normal. A quick view of his left also showed no abnormalities.
>
> "From watching him perform I could detect no evidence of motor weakness. He manipulated and reached for objects without any sign of incoordination. Tone of musculature seemed quite normal except for questionable tightness of heel cords. Pin was perceived equally well bilaterally. Deep tendon

reflexes were hyperactive, particularly in the lowers. I was able to get sustained ankle clonus on the left and unsustained on the right. The left plantar was downgoing, the right up and downgoing. Both the cremasterics and abdominals were present and equal.

"Impression.--I don't know whether this child's difficulties are primarily physical or psychological. I would favor the former without sufficient evidence to do so. Of the organic disease processes that are possible, Heller's disease is one possibility."

Laboratory Tests

"X-rays of skull - normal head.

"Lumbar puncture under seconal sedation. Pressure 86, cells 0, protein 7.7, sugar 48, CL 120, Kolmer negative.

"Mazzini: negative

"Blood: HGB 12.5, WC 7,300, P. 47, L. 57.

"Urine: negative. ESR 4."

Electroencephalographic Report

"Impression.--Not completely technically satisfactory record. The tracing is suggestive of a right occipital spike and spike and wave focal abnormalities and contains convulsive features.

"Recommendations.--Would like to repeat, after sedation on the ward, prior to coming to the lab."

Psychiatric Evaluation

"My own impression of the boy was although he presented the picture of a psychotic type of disturbance there was much to suggest the possibility of an organic central nervous system disturbance and that the diagnosis would probably be clarified with the passage of time. The electroencephalographic findings were not strongly in favor of organic disease."

Psychological Evaluation

"He talked to himself using words and gibberish, but they were not related to his activities. At times he laughed for no apparent reason. When asked to seat himself to play games there was no response and the mother's aid was enlisted. Peter complied although he did not look at or talk to her. His attention was difficult to obtain and there were no observable clues to determine when he was listening. He was completely indifferent to the demands made of him. His speech was repetition of what was said to him, i.e., 'You will have to cut with scissors.' He initiated no conversation but talked and laughed at himself. When given the blocks to replace in a box and then shown a pyramid to copy, he replaced the blocks, got up from the table, rubbed his eyes, and with a continued whining cry kept repeating, 'Blocks, blocks, blocks.'. . . His affect for the most part is inappropriate and labile. He is hyperkinetic, showing both random and purposeful activities. He showed little response to environmental stimuli--is responsive sometimes indirectly to his mother. He has not established hand dominance. His form perception with blocks as a media is inordinately acute and his motor coordination as far as speed of performance is concerned is at a 5:11 level. He was unable to reproduce a design from memory and refused to attempt many subtests. His intelligence rating (Merrill Palmer IQ=84) gave him a mental age of three years, four months, with a corresponding dull normal rating. Conclusion made on the basis of this test may not indicate his true potential.

"Impression.--The overall impression is that of childhood schizophrenia."

Speech and Hearing Evaluation

"During the interview the child was rather quiet, vocalizing and using some jargon interspersed with clear words such as 'chair' (appropriately used as part of his vocalization when seated on a chair).

"He quietly fingered books or toys but could not be made to stop and start other activities such as placing forms into a board which he did rather well and with uninterrupted attention. He did not reject body contact. Rather, it was felt that he had lost the meaning of objects, pictures, and people, as well as words. When pictures were shown him he recognized one or two very familiar ones (orange, milk), and tried to name them with fair sound approximation. However, the rest he could neither name nor point to when named.

"There was severe echolalia--patient repeated words and sentences said to him lacking understanding of their meaning entirely. He perseverated, using the word 'shoe' for instance after it was said to him, to name other pictures. Articulation of speech sounds and voice were entirely normal when he repeated words or sentences, but he immediately changed into garbled speech when using spontaneous utterances.

"Impression.--This child shows the clinical picture found in patients with damage to the language centers--transcortical aphasia--which in this case may be part of a progressive disease of the central nervous system invading all areas of function and behavior."

Official Diagnosis on Discharge

"Undiagnosed disease of the nervous system manifested by deterioration of speech and behavior.

"Recommendation.--The patient should be in therapy and he was discharged home to be followed by lay therapy under the supervision of a psychiatrist."

Confused by the diversity of opinions expressed by the hospital specialists, the parents sought an additional opinion from a psychoanalytical colleague. They reported that she felt "that there was no organic condition and that the basic problem was emotional." (4:1) Following the hospital recommendation and with a referral by this psychiatrist, a lay therapist provided psychotherapy two to three times weekly for the following eight months.

While in psychotherapy, Peter's parents decided to become stricter with his diet as his father felt he was presenting varieious allergic manifestations. When his diet was gradually deprived of allergy producing food the periods of daze and rocking disappeared completely, as well as the symptoms of headaches. (4:2) During the spring months Peter had a runny nose and despite the new diet there were again some periods of daze. (4:4) During the following two months, his parents reported four episodes in which after walking in a field covered with goldenrod, Peter presented a state of drunkenness marked by confusion, excitation, with inappropriate laughter, enuresis and defecation. This condition lasted two or three hours, followed by a sudden recovery.

Peter's father became more suspect of an allergic disorder. Therefore, an opinion was sought from an allergist whose report was not available. Peter's father recalled that is was felt:

> "Peter was hyperkinetic as many allergic children, and that he might have an allergic encephalopathosis due to some inhalant (probably pollen) and inducing a kind of chain reaction to other allergisants (food). Scratch tests were done. There was no reaction from scratch tests interdermally. A total 'parentectomy' was advised." (4:6)

The following month Peter and his parents went to a pollen free region in the mountains of New Hampshire. His diet was deprived of the foods to which it was felt he was allergic. His parents reported that the improvement was spectacular--he was happy, breathing well, saying more and more words and short sentences. His behavior was appropriate and he played well. On playgrounds he was attracted by other children but unable to establish contact. Upon returning to their urban home Peter appeared better adjusted. He was sleeping and eating better and his speech had improved somewhat. There was less echolalia and a few sentences.

At this time psychotherapy was discontinued. Upon concluding eight months of lay therapy, Peter's parents felt that there had been a slow improvement. Peter was saying a few words and very short sentences spontaneously. They summarized the psychodynamics suggested by the psychotherapist as follows:

> "The child had an overdeveloped super-ego leading to extreme shyness and stubbornness through over identification to his father. The states of recurrent confusion (daze accompanied by occasional enuresis and defecation) were interpreted as manifestations of rebellion against early toilet training (which the child had not undergone but would have been unconsciously implied in the parents educative attitude). All these factors would have created an exaggerated dependency of the child on the mother."

In response to the therapist's opinions, the parents felt:

> "The shyness and stubbornness of the child were protective reactions probably connected with the loss of speech and not as factors leading to such a syndrome as loss of speech with echolalia and reversals of words. On the other hand, the child had not undergone any toilet training and the explanation proposed by the therapist about Peter's crises of daze would not account for the fact that they disappeared when some obvious causes were removed (allergic factors)."

Peter's parents also summarized the psychodynamics suggested by the supervising psychiatrist:

> ". . . The origin of the trouble ought not to be sought in ways of raising the child. The psychiatrist felt that the mother instinctively responded to the demands of a child suffering from anxiety. The psychiatrist was inclined to give most importance to two emotional experiences which could have been traumatizing: 1) Fear of a cat which one night jumped on the child's bed. 2) Castration fear when he saw a naked little girl in the park when he was three years old."

In response to these opinions, the parents felt:

> "The emotions mentioned occurred when the child was already disturbed. Nevertheless, they may have played an important role in some of his symptoms which disappeared when the child was relieved from his anxiety."

Shortly after the termination of therapy, a recurring cold lasting for a period of several weeks was accompanied by periods of daze, irritability, and daytime rocking, giving the impression of a reaction to headaches and relieved by the intake of mild doses of aspirin. Peter's parents reported that the situation improved. He looked happier and was more aware of his environment, was tender with them kissing them spontaneously, ate more cleanly, and made known his needs and desires, but continued to present echolalia and often inversions of words such as: "Tired I," "Around all," "Candy piece of," "Ready get," "Table set," "School go," "Swing go," "Pee-pee go."

While at the playground he no longer would climb up the ladder of the slide; he refused to see-saw, and was unable to swing himself, but liked to be swung. He began climbing in the apartment. In social contacts with both children and adults, he tried to get his face as close as possible with a tense smile, staring into the eyes of the other person. (4:8)

Dissatisfied with their son's status, his parents sought further evaluation in a major, urban clinic.

Psychiatric Evaluation

> "It was our combined impression that we were dealing with a child who presented the general clinical picture of an autistic child with special lability in the biological areas manifested by severe allergic disturbances. (4:10)

Fifth Year

Following the advice of Peter's lay therapist, he was enrolled in a normal nursery school program for a period of six months. (4:8 - 5:2) The following observations were made by the nursery school teacher:

> "Peter is a tall boy with delicate features. His facial expression does not seem to show an awareness of people. His responses are often a giggle or laugh; at other times he will withdraw by running away or by whining. He mostly walks about on tiptoes with a jerky kind of movement. This gait is sometimes accompanied by his hands hanging limply, at other times his arms are held closely to his body and his elbows are bent. It seems like a rigid movement except for his hands constantly moving back and forth.
>
> "During the first two months, Peter was able to attend the school for one or two hours daily. During this time, his mother was constantly with him. . . . In the yard he did not move but stared into space. He seemed to be completely unaware of his surroundings. After awhile, he would select a ladder or a climbing apparatus which was not being used by the children. As soon as the children approached the ladder, he would immediately withdraw. Sometimes Peter would go to the jumping board and jump a few times, but after a short while he would get down on his knees and rock continuously for long periods. We have often been able to interest him in the sandbox. He sometimes played with pail and shovel, filling it with sand or making mudpies, but often he would repeat his pattern of constant rocking.
>
> "His response to teachers was impersonal. He did not see a hand extended to help him, neither did he seem to respond to words or facial expressions. After awhile he responded to the words 'juice,' 'cookies,' and 'raisins.' Peter always sat down with the group for juice. He seemed to have a special need for cookies and sweets. He would take cookies away from

the other children and also noticed the closet where we kept the candies and helped himself.

"His mother pointed out that Peter was allergic to certain foods (beef, milk, wheat). She mentioned that this allergy seemed to affect his nervous system and his reaction to wheat cookies would be either whining, crying, or a complete withdrawal. His mother brought special food to school for Peter. After four months, however, upon advice from his mother, we gave Peter everything that our own children eat, without any noticeable change in his general behavior.

"Peter had opportunities to paint, play with clay and water, and do puzzles. As far as I have observed these activities they have been rather mechanical. Creative materials, such as clay and paint were used in a manipulative fashion. There seemed to be no joy or satisfaction derived from the activity; while his fingers worked, he merely stared into space and there was a complete unawareness of children around him. Peter has always been able to do our five year old puzzles. He has excellent finger dexterity and likes to play with small interlocking blocks. He also has twice played a simple Lotto game with us. The children helped him in this game but he himself was able to put the card on the right picture.

"After two months it was possible for his mother to sit in the office and leave Peter in the group. This separation was not altogether complete. Peter indicated to the teachers by grimacing, frowning, whining, and running to the door that he wanted to see his mother. Sometimes he would utter a few syllables or say, 'mama.' His 'visits' to the office were frequent. He rarely ran to the office to seek affection from his mother; he usually went to the couch and rocked. His rocking is often accompanied by grimacing, crying or whining--at other times his whole face seems twisted as if in pain. It has usually been hard for his mother or teacher to bring him back to the group. Often we felt that it would be better to take him home because he seemed too tired or upset. At times he has been able to return to the group. The teachers often used a bribe such as raisins or cookies to coax him back. The children have been more successful in helping Peter to return to the classroom. Peter often takes their hands and follows them upstairs. At times he follows their instructions, e.g., sitting on a blanket, taking a book or game from the shelf. Usually during the group rest time, Peter will sit on his blanket and rock. He will often hum a tune or utter some words.

"Peter seems to have some feeling for music; he often joined a small group and took a child's hand and danced or listened. He also played the rhythm instruments. However, he became frightened when the whole group sat down for music and quickly ran out of the room.

"Our children have made many overtures to play with him. They have talked to him, tried to interest him in their games or put their arms around his shoulder. I have never observed that Peter tried to imitate a child or respond. He always seemed far away in his own world not noticing what was happening. Some of our children are very fond of Peter. They try to help him. They want to make him talk and they show affection for him. Peter does not object to the close contact with children.

"By the fourth month of Peter's attendance at school, his mother was able to leave the school for brief periods. She stayed in the neighborhood of the school and was always available. The teachers had made enough contact with Peter so that he was able to sit in their lap when he was upset. When he indicated he wished to go to the office to see his mother, the teacher accompanied him to the office. Upon arriving and not seeing his mother there, he seemed to accept her absence and returned to the classroom. Lately Peter started to run up to the attic floor and in the yard he will run to the top stairs of the fire escape. This has become the pattern of his constant behavior. He does not seem to be occupied as much with clay or water and will take every opportunity to run out of the room. We have tried to ignore this as much as possible and he has often returned rather quickly. Lately, however, he has found a way from the attic to the fire escape and we had to curb him since this is dangerous. The mother, the teachers, and the children are always on the alert and following him. At one time the teacher held him very close so that he could not move his arms and legs. His reaction did not show anger. He did not try to struggle free. He reacted by laughing constantly.

"Lately Peter has uprooted the children's plants, thrown clay in the fishbowls, knocked down cups from the table and in general has been more disruptive in the group.

"Peter has always been able to dress and undress himself without any help. Yet at times he seemed to be completely unaware of what he is supposed to do and must be helped. He has always used our toilet facilities and washes his hands. His mother has indicated that now Peter is harder to handle at home. He urinates in the middle of the room, pours coffee on the carpet and acts, 'like a wild man.'

"We feel that the school has helped Peter a little. He now seems to be more comfortable with children and adults and the school has become a familiar place. He can stand noise a little better. However, in terms of this recent behavior, we question whether our particular school setup is the best place for Peter. We would, though, like to have further contact with him and like him to visit the school."(5:2)

Peter's mother reported that while at the nursery school he became extremely hyperkinetic which had not been seen previously, restless, sleepless, and unhappy. Because of this condition, and as a result of the personal investigation and readings done by his parents, Peter's stools were examined for escarus worms. The laboratory report was positive. His parents also had positive laboratory findings.

Sixth Year

During this year, Peter attended a day school for exceptional children. (5:11 - 6:11) Their description of their experiences with him was as follows:

> "Peter is at once a fragile, graceful child and an imp. He has a lean body, delicate features, pale face, and bright blue eyes. He skips up to a person, peers into his face (almost rubbing noses), then he giggles and wiggles, cocks his head, takes a few steps back and starts the process all over again. Thus he teases, communicating in this way, though he does not speak directly, saying, 'Play with me.'
>
> ". . . He does not speak outright, but he does repeat when the teacher says, 'Let's sit down for music time.' Peter will say, 'Sit down--music,' and he will sit down. He is slowly learning to relate objects and names. When the teacher gives him clay Peter will say, 'clay.' He also likes to hear and make noises made by mouth, to watch wiggling fingers, to play peek-a-boo. He often hits out at the adult when angry or frustrated. He feels much affection for other children and adults. . . . Peter's lack of speech becomes more actue when something bothers him. Since he cannot say what is wrong he whines, cries, and screams. It is up to the adult to figure out what is wrong and amend it if possible. Lately his crying and temper tantrums have become more related to particular situations. He cries and whines when the other child is having academics. He has a tantrum when he is not allowed to turn the pages of the book the teacher is reading at the pace he wants, rather than the pace at which the teacher is reading.
>
> ". . . Peter's large and small muscle coordination is excellent. He likes to run, skip, jump, and climb. He is cautious and somewhat fearful of high and new places, but he is excellent at figuring out how to reach places estimating distances. Peter also likes to use his hands and fingers in play. He builds with small blocks, takes apart and rearranges small instruments, zips and buckles his clothes. Most often he can take his time doing these things. However, if he feels cranky and one block does not stay in place or the zipper gets stuck, he might have a screaming tantrum. In general, his excellent coordination is a source of constant pleasure to him.

"Peter seems hungry all the time. He eats everything with his fingers. Also he insists on eating the inside of sandwiches first and then the outside. Sometimes he gobbles his food, other times he eats very slowly. He has an allergic reaction to some foods and will not eat others. He is on a sugarless (refined) diet at the present time.

"Peter is a restless, hypersensitive boy. During rest time he rocks. During music time he likes to run and skip around the room or dance and jump with one teacher. He likes the teacher to initiate his dance steps, and then he will imitate hers. This is quite different from six months ago when Peter would have nothing to do with anyone else while dancing, rocking, or standing. He moved around a room in disorganized, unrecognizable steps, rolling his head and eyes around and around, and moaning a tune.

"More and more Peter is taking care of his own bathroom needs and no longer resists being reminded even when absorbed in play.

"Presently he insists on closing the bathroom door after using the bathroom. He cannot have anyone or anything touching the table upon which he is working. He used to insist on having people in certain positions. Every time someone's legs were crossed he would uncross them. . . .

". . . Peter responds quite well to the routine in school and to the teachers' directions. Sometimes he seems confused. He will bring his mat out at the wrong time, or start going downstairs to go home when it is time to go to the yard. Peter is adept at Stearns number board and intricate puzzles, but he shows no understanding of number concepts. He becomes cranky and nervous if the teacher tries to show him how to do something. He refuses to let the teacher touch his book, but he will let the teacher use blocks with him. He might take away the blocks that she has placed and put them back again himself. Peter responds to a limited number of pictures with words. . . . He is not ready for formal academic training.

"Peter has a long attention span when in good spirits and doing something he wishes and likes. He plays with blocks for half hour periods, building and rebuilding towers and bridges. In other activities his span is shorter. He will build roads and towers or make designs in clay. He will play with a piece of string, making a design or toy. . . .

"He perplexes the other children somewhat primarily because he does not talk. Secondly because he sometimes has a hostile reaction to people when he will hug them too tightly, gritting his teeth, grimacing, and making clicking noises with his mouth. . . .

"The school had to discontinue Peter as his need for individual attention as well as his lack of communication made it impossible to include him in the group."

Seventh Year

Concurrent with his attendance at the above-mentioned school, Peter was seen by a speech therapist twice weekly for a period of a year. (6:7 - 7:7) She made the following observations and comments about his behavior:

> ". . . When first seen at our office, Peter was described as a slight, dark haired boy with small features and a frequent inappropriate grin on his face. . . .
>
> "It was noted during the next few sessions that muscular coordination was poor. He seemed to prefer the right hand, but there were many left hand leads. In terms of motility, he seemed quite plastic.
>
> "At that time, Peter only appeared to understand what was said to him if the comment was directed towards something in which he was intensely involved--when for example at the work bench he followed directions like 'Unscrew it,' and 'Turn it the other way.' . . .
>
> "During the initial sessions, Peter seemed unresponsive to the therapist. Contact was eventually made by spoon feeding him candy, after which he accepted and returned affection. There nevertheless continued to be intervals when it was difficult to reach him. . . .
>
> "Summary.--Peter's difficulty with boundaries and consequent diffuseness interferes with appropriate responses to his environment. There seems to be little stability in perceptual or conceptual experience. Behaviorally, he is disorganized, aimless and bizarre. Orientation of self in space is at a primitive level--one evidence of this is his inclination to rock.
>
> "Peter's speech disorder seems to be a reflection of his difficulty with boundaries. Much of what he says is only tangentially related to activities around him. While playing with a gun he said, 'Now gun with the shoot, now ready, get set, now hurt, now ready, now out flack, ready, get set for hurt, now ready get hurt.' Responses are frequently delayed in time--once when joking about a baby's cry in the doctor's office next door the therapist imitated the cry for Peter. A full six minutes later, Peter looked up, grinned, and imitated the cry himself. Peter is liable to make klang associations. When referring to the suction darts he went, associatively to 'hearts, diamonds, hartch.' Peter has not separated himself sufficiently from his environment, and this is reflected in his reference to himself as 'he.' He is apt to confuse the names of other persons especially if there is some similarilty in roles. When he came back from summer vacation, he referred to the therapist as 'Mummy.' . . . We found that for him to get to know about an activity, we had to repeat it time and time again using the same words each

> time. Peter seemed to be able to remember the spelling of names only for short periods. One saw the same plasticity in the case of spelling as with speech. It was hard for him to understand that letters belonged in a given order and orientation in space. . . ."

Psychiatric Reevaluation

When Peter was seven and a half years old, his parents arranged to have him seen by the psychiatrist who had evaluated him three years before. His report was as follows:

> ". . . Although some progress has been made, he still presented most of the classical features generally associated with the autistic child. However, there was evidence at this time that he was emerging from a total state of autism and had begun to develop early object relationships with beginning symbol formation and acquisition of speech. At that time he was able to communicate in simple sentences. He demonstrated a typical anxious, continuous, impulsive exploration of his environment. He was able to participate in some simple testing, and although his general level of performance was obviously in the retarded range, there was some indication of potentials higher than what he was able to perform.
>
> "Programing, counseling and drug therapy were developed around this child for a period of six months, and then contact was again terminated by the parents. In the course of this period it was quite obvious that many extensive emotional problems in parent-child relationship existed that could be identified as having some significant relationship with the overall clinical picture seen in the child. During my own contact with the child himself, I could not identify any specific neurological problems. From the records available to me, no other examining physician in the early history of this child suggested that a neurological disorder existed, although the presumptive diagnosis has been made on one or two occasions and then subsequently ruled out by negative findings."

Upon being discontinued from the regular program of the day school for exceptional children, Peter was seen by a tutor mornings and two afternoons a week. The tutor often took him to the school to try to establish contact with other children. This program continued for a period of ten months. (6:11 - 7:9)

The following excerpts were taken from the tutor's report:

> ". . . When not involved in a specific activity, I find Peter to be extremely overactive physically. He has good coordination of practically all his muscles. The dexterity of his fingers is normal in the use of scissors, blocks, and puzzles, and in pasting objects within a given space area. His sense of rhythm is excellent; for example, dancing to music. He has definite facility when it comes to skipping, walking, and running.
>
> ". . . Peter can become frustrated and stop what he is doing with no forewarning. He can be working on a puzzle that he is familiar with and things seem to be going smoothly when suddenly he will stop and cry, sit down on the bed and begin to rock for no reason that is apparent. . . .
>
> "Peter echoes words or phrases but rarely do the words have meaning for him. They are simply sounds he will recognize. In some cases he is able to associate words. For example, he listens to a record called, 'Peter Pan' and he knows the characters' names. If I should say 'Peter' to him, he will add 'Pan.' He will do the same with the names of all the characters. . . . Peter's toilet habits have improved. . . . Because of his lack of speech he cannot communicate verbally that he has to relieve himself. During the first few weeks, he occasionally wet his pants. Now he can indicate that he has to go to the toilet, but this is still rather difficult to perceive. Wetting has completely disappeared only because I tell him to go to the bathroom when I recognize the signs that he has to go. . . . He will use utensils to eat only when directed to do so. He prefers to use his fingers to eat food. . . ."

In order to establish Peter's inability to participate in public education, a psychological and a psychiatric evaluation were made by consultants to the Board of Education when Peter was seven years and seven months old.

Psychiatric Impression

> "Peter presents a clinical picture of childhood schizophrenia."

Psychological Report

> "Peter should be excluded from school on the basis of a severe emotional disturbance and/or neurological impairment. . . . In attempting psychometrics, a Stanford Binet, Form L and figure drawings were administered with the following results: CA 7-7, MA 2-1, IQ below 30. There were successes

up to and including the three year level, but only in performance nonverbal areas. The test results are not considered valid or reliable, and I suspect potential capacity is much higher than indicated."

Eighth and Ninth Years

Admission to Seaview

When Peter was eight years and nine months old, he was admitted to Seaview for day care. In the late afternoon he returned home to spend the evening with his mother who had taken residence in the community. Peter's father pursued his medical practice during the week, visiting his family week ends.

In Seaview's pre-admission questionnaire, Peter's mother provided the following information regarding his status:

> "When he seems to be very frustrated, due to the impossibility of expressing what he desires, he embraces the person with him in a kind of strong squeezing bear hug which lasts a few seconds and which is shortened when reassured that the person knows that he is trying to find the words for what he wants. When it is possible to interpret his desire, he relaxes immediately. If it is not possible to guess what he wants, he is reassured by the person saying something to the effect of, 'You want something? Let's find out what it is.' His response to physical discomfort and pain provoke a crying spell or temper tantrums. He will never say where he feels pain or that he feels any at all.
>
> "When the need to toilet is manifest, Peter says 'Go push,' when he wants to move his bowels. He has to be reminded to urinate at intervals during the day. Nighttime wetting occurs on occasion. He is capable of dressing himself; however, he prefers to be dressed. . . . He does not tie his shoe laces. . . .If he particularly likes something he wants more of, he tries to get others to give him theirs. He uses a fork and spoon periodically. . . has to be reminded to wipe his hands and face on a napkin. . . will dump his food if he is not feeling well. The only food aversion is milk. . . . He is allergic to chocolate, peanut butter, raw salads, and nuts. He sleeps approximately nine hours a night, occasionally rocking for several hours before sleep. Blisters may appear upon his feet because of rocking. He has only occasional nightmares."

Attendance at Seaview

The following outline of Peter's behavior in the milieu of Seaview was compiled from the direct observations of the research staff and an examination of the school records covering the twelve month period of his attendance.

Activities of Daily Living

Eating.--A variety of difficulties centered about eating. He seldom ate the entire meal. He was often observed at mealtime sitting at the table with both hands grasping the edge of his bench, rhythmically rocking. Frequent episodes were recorded where it was necessary to feed him because of his refusal to eat. This was not always successful. In eating such foods as sandwiches and pies, he would take them apart and eat the fillings first. When feeding himself he invariably used his fingers. When encouraged to use utensils, partial use of a fork or spoon was recorded. During the last four or five months, his poor appetite was demonstrated by a seven pound weight loss. A great variety of foods were refused but, with the exception of milk, no clear-cut food aversions were identified.

Sleeping.--Afternoon rest periods were spent rocking. Peter would assume a kneeling position on a bed or cot, grasp the edge of the mattress, stare blankly into space, and rock forward and back. His mother reported that rocking prior to sleep at night was also predominant. Sleep disturbances continued to be a major problem area. Frequent episodes were reported when he was awake well after midnight, occasionally until two or three o'clock in the morning.

Toileting.--During this period, Peter continued to wet his pants during the day. Occasionally he was able to communicate successfully his need to urinate. With the exception of occasional diarrhea, he was completely bowel trained. Nocturnal enuresis persisted.

Dressing.--Peter was able to dress and undress himself with minimal assistance. Although he was able to manipulate zippers, buckles, and other fasteners, when he encountered the slightest difficulty he became readily frustrated, often screaming in distress.

Motor Behavior

Essentially, Peter's gait was normal; however, periodically he would ambulate for hours at a time on tiptoe. He ascended and descended stairs with alternating feet. He was able to ride a standard two-wheel bicycle to and from school accompanied by his mother.

In the large play yard he limited his range of movement, staying close to the attendant and only with much persuasion could he be coaxed to sit on the seesaw or swing. He was never observed using the swing or slide independently.

The range of his motor activities were limited for his age. This seemed to be related in part to his energy level which appeared to be extremely low. At the beach Peter did not swim but played at the edge of the water exhibiting a cautious and fearful attitude about getting wet.

In a group dancing activity, Peter was able to imitate gross motor movements. In his all-consuming interest in doors and locks, the development of some fine motor movement was observed.

The educational therapist reported that he experienced a fair degree of success in those activities where a visual model was provided. He was able to match and sort geometric forms and letters. Failure was consistently experienced when he was asked to reproduce or recall, particularly when the visual model was absent. Inconsistent performance was seen in spontaneous reproduction of his own name from an auditory stimuli. Some of the time he was able to write his first name; at other times he was only able to write the first two letters. He experienced success in completing Playskool puzzles consisting of as many as nineteen pieces. Form perception was also demonstrated in his careful use of scissors and in his ability to color pictures. The educational therapist felt that he had difficulty in the areas of memory, word, and number concepts. A marked dependence on kinesthetic perception was noted in the all-pervasive use of his index finger to trace forms.

Linguistic Functioning

Tape recorded samples were obtained throughout the milieu of Seaview, i.e., educational therapy, crafts, music, and play room activities. Peter's vocalizations consisted of short echolalic responses to attendants' verbalizations, indistinctly articulated jargon, a few spontaneous words that appeared to be delayed echolalia, and considerable singing of fragments of familiar songs in which the melody could be recognized but the articulation was usually indistinct resembling jargon more than the words of songs.

While Peter produced a few echolalic and delayed echolalic word responses which were clearly articulated, his vocalizations were mainly musical phrases, some familiar and some unfamiliar tunes, sung in jargon; however, entire sessions might elapse without any vocalization despite extensive auditory stimulation. He would occasionally speak in jargon with noticeable changes of pitch, duration, and rhythm that were greater than those of normal speech. During the sample of activity sessions analyzed, there was no purposive use of speech to communicate with therapists or attendants.

Asocial Behavior

Rocking was prevalent in all facets of his milieu. He would rock in a variety of postures--standing, sitting, or kneeling. He would stand with his arms hanging limply at his sides, his head thrust forward, and by flexing his knees would rhythmically bob up and down. While sitting or kneeling he would grasp the edge of his chair or bench, rocking forward and back forming an arc of approximately five to ten degrees at the rate of one hundred to one hundred and twenty cycles per minute.

Peter showed an unusual interest in his nasal mucosa by sporadically but for extended periods thrusting his finger deeply into his nostril. This was often preceded by wetting his finger on his tongue prior to massaging the mucosa.

He frequently startled people by his unique approach to social contact. He was especially prone to sniffing the person or their clothing upon first contact.

Response to Frustration

Peter's responses to frustrating situations would range from simple avoidance through rocking to enormous outbursts of rage. The milder episodes were marked by rocking, whining, and repetitiously wailing a word or phrase such as, "No! No! No!" "It's all right," "I'm right here," "Don't be afraid." If these tension states continued, his vocalizations would reach a high pitched wail and he would vigorously reject any attempts at physical contact or manipulation by pushing, biting, and hair pulling. Occasionally during these episodes he would beat his head with his fists. Rarely a week passed without one or more of these outbursts. In the milieu of the institution it was seldom possible to ascertain the precipitating circumstances.

Response to Environmental Change

Peter was extremely apprehensive of any new situation. When he first arrived at Seaview, his resistance to new spaces was so intense that it took several weeks before he could move freely about the buildings and grounds. He displayed an inordinate need for order and sameness, manifesting distress when any aspect of his daily routine was altered. His intolerance and inability to comprehend even minor deviations was particularly evident each afternoon when his mother would arrive to take him home. Should she pause to speak with anyone he would become anxious and distressed during the delay and vigorously tug, push, and pull his mother towards the door.

Response to Children

Neither Peter nor the children with whom he was grouped had any socially meaningful play or shared any activities together. With the exception of contact with two of the most passive boys, Peter maintained distance from most children and withdrew completely from those who were noisy or threatening. Occasionally during an outburst of rage he might indiscriminately lash out or push away another child. It was frequently necessary to separate him from the group.

Response to Adults

With few exceptions, Peter rejected physical contact or direct manipulation by adults.

Health and Physical Status

When Peter was nine years and five months old, his father sought a psychiatric reassessment by a colleague who had known the child intimately since birth.

Psychiatric Reevaluation

> "He had attacks of petit mal until the age of six. . . . A physical examination now reveals hyperactive reflexes especially of the lower extremities. His gait is uncertain, his visual-motor coordination is impaired. He is still underweight. His speech has improved, but aphasia is still present. . . ."

Pediatric Neurological Consultation

During the course of experimental therapy, a consultant to the research staff reviewed the case history and in observing Peter felt that: "The prominent problem was cerebral dysfunction."

Pediatric Consultation

When Peter was nine years and eight months old, a rapid disintegration in behavior was seen accompanying an attack of giant hives and joint swelling. Because of this condition Peter's mother sought a local pediatric consultation. To rule out the possibility of a collagen disease, extensive laboratory tests were done which were essentially negative.

"Laboratory tests.--	Total protein		7.0
	Albumin		5.1
	Globulin		1.9
	A/G		2.7
	Heterphile		Negative
	L.E. Prep.		Negative
	Latex fixation		Negative
	WBC 9,980		HGB 13.0
	Lym 54	Polys 36	Stabs 1
	Enos 1	Monos 6	Boso 1

"Recommendantion.--Reevaluation by a neurologist."

Pediatric Neurological Consultation

Following the recommendation of the pediatrician, Peter's parents arranged to have him seen by the pediatric neurologist who was a consultant to the research staff. However, as Peter still presented residual effects of the hives episode, a complete neurological reassessment was not feasible at that time.

> ". . . Physical examination: A well-developed and nourished white male who is very apprehensive and fearful.
>
> "Neurological: Unsustained bilateral clonus. Balance and coordination immature. Finger to nose normal.
>
> "Impression.--1) Urticaria, second degree, blue cheese. (A severe reaction to penicillin previously reported.) 2) Cerebral dysfunction, ?convulsive disorder. Anxiety intense."

During the last two months at Seaview, Peter's capacity to function in all areas deteriorated. This was marked by extreme hyperkinesis, agitation, head banging, screaming, loss of appetite, and insomnia. Peter presented a tragic picture.

Experimental Therapy

At age nine, Peter was a handsome child with blue eyes and delicate features who appeared well-nourished and well-proportioned. He was assigned to the female clinician.

The fifty-eight sessions of relationship therapy with Peter were characterized by a lack of verbal communication. His disability in language areas and the subsequent limited social responsiveness gave him the appearance of being disassociated from his environment. Not able to experience success in dealing with his environment, Peter manifest an emotional lability marked by a low frustration tolerance which led to catastrophic reactions.

During the course of therapy Peter did not receive any psychoactive drugs; however, he received various medication in relation to the allergic condition described in his health and physical status.

First Month (1st through 13th session)

From the moment Peter entered the therapy room he was socially uninhibited. There was no hesitation in his exploratory activities as he flitted from toy to toy. He did not look to the clinician for approval or disapproval about the way in which he handled the available materials. This was demonstrated in the very natural way he grasped and sucked on the nursing bottle and the complete freedom with which he spilled the water on the floor. His activities were interrupted throughout the session by repetitiously licking the little fingers of both hands and thrusting them deeply into his nostrils, a pattern which was prevalent throughout the entire course of therapy.

Throughout his milieu he was known to have an all-pervasive interest in doors, keys, and locks. While exploring the therapy room, Peter exhibited great interest in the various locks and fasteners on the doors, windows, and screens. With the exception of the bathroom door, it was necessary to limit his manipulation of the locks on the doors and windows. This limit was not successfully communicated until gestures accompanied the clinician's verbalizations.

The relationship during this initial session was limited to nonverbal modes of communication--smiling, occasional direct visual contact with the clinician, and a single attempt at direct gesture communication in which he enlisted the clinician's help to unscrew the top of a nursing bottle. Some echolalia was heard intermixed with incomprehensible jargon. Peter's spontaneous speech productions were limited to twelve different nouns and adjectives. He named the various parts or colors of the play materials while tracing their outline with his index finger.

Peter manifest unique use of his olfactory and kinesthetic perceptual modalities. Most striking was the extent to which he sniffed all the play materials. This pattern of olfactory stimulation persisted over the entire course of therapy. By alternately sniffing through one nostril and then the other, he would frequently and repetitiously smell both animate and inanimate objects. The need to perceive through the kinesthetic mode was extensively observed during this initial contact and in subsequent sessions. In order to identify many objects, he would trace their outline with his index finger and on some occasions appropriately name the object or its color. An example of this was seen early this month as Peter knelt before BoBo, the puncho toy, and traced the colored dots on its vest with a circular motion using the index finger of his left hand. He said slowly and deliberately, "Red, orange, blue." As there was no orange on the puncho toy the question of his ability to identify and discriminate colors was raised. As the clinician named the colors, Peter mechanically echoed each of them.

Another area of perceptual difficulty was observed in an isolated episode in which Peter experienced confusions in spatial relationships. In attempting to separate the nipple from the nursing bottle, he failed to recognize that the nipple was an integral part of the screw top, and finally resorted to forcing them apart by pulling on the nipple. Although he eventually discovered how to screw the top on the bottle, he continued to struggle to replace the nipple by forcing it back into place.

During the first month of therapy he was able to experience the comfort and satisfaction afforded by successfully doing one of the few things that he could do, play with clay. Peter would roll the clay into long, pencil-thin strips which he then manipulated to form designs of a circular nature. These designs defied interpretation as this activity was devoid of any accompanying verbalization with the exception of the single noun "clay." Peter allowed the clinician to share this activity by handing her pieces of clay which she used to imitate his designs. These periods, during which the clay was the focus of attention, were especially free from tension.

Peter's play with the Plasticene was interrupted during this period by trips to the bathroom, occurring as frequently as five to six times per session. A stereotypic behavior pattern associated with toileting was observed. Within moments after entering the therapy room, Peter would cease playing with the clay, look at the bathroom door, and indicate his wish to go to the toilet by saying any of the following: "Door," "Pee pee," or "Push down." During the first few sessions when the clinician responded by verbally reflecting his need, he became repetitious in his request, intensely echolalic and anxious.

(Peter sits at the table, glances toward the bathroom door and then to the clinician.)

Peter: Door? (With a rising inflection while he squirms in his seat.)

C: You want me to tell you that you can open the door.

P: Door? (Pause with much squirming.) Door? (Rising crescendo)

C: Yes, you can go to the bathroom.

P: (Rising from his seat he runs to the door, looks at the clinician anxiously and shrieks) Door! Door! Door! Door! Door! Door!

It was quite evident that he did not comprehend the clinician's verbalizations. In order to communicate successfully the clinician's acceptance of his need, it was necessary to incorporate extensive use of gesture with specific verbalizations. Having once surmounted the communicative barrier, Peter would perseveratively unbolt the door, step into the bathroom where he would wait for the clinician, carefully close the door, reach on tiptoe to fasten the hook and eye, touch the tip of the hook and trace the eye with his index finger. He would then proceed to the toilet, unbuckle his belt, and by grasping the sides of his trousers would pull them down thus forcing his zipper open, usually accompanying this with the verbalization "zip, zip." If he did not have immediate success in producing either urine or feces he would become very distressed and begin vigorous squirming, twitching movements of his pelvis.

Consistent with the therapy rationale of acceptance and permissiveness, the clinician was cautious about any direction of his toileting behavior. Peter was careless in the placement of his penis while sitting on the toilet, frequently urinating on the floor or his clothing and, in an unconcerned manner, would fail to wipe his rectum or flush the toilet. He would hastily leave the bathroom, invariably failing to pull up his trousers which were often left hanging about his knees as he shuffled back into the therapy room. Because of the frequency of the trips to the bathroom and the number of times he was unable to produce, it was never clearly established whether he was motivated by a real need to toilet or the freedom experienced in opening and closing the bathroom door. The latter was a forbidden activity elsewhere in his environment.

In the early weeks of therapy the clinician recognized Peter's responsiveness to her imitations of his motor and speech behavior. This was seen as he readily accepted the clinician's imitation of him when he would engage in one of his favorite activities, the extending of his tongue to lick his chin. Also, he was able to follow skillfully a variety of complex manipulations of the tongue with observable delight. He responded with apparent pleasure when the clinician imitated his jargon. These shared activities served to communicate and reinforce the feeling of mutual acceptance in the child-clinician relationship.

Inconsistent with his oral-motor skills seen in imitation Peter found it impossible to experience success in blowing up a thin-skinned balloon. With one exhalation he was able to partially inflate the balloon, but he failed to comprehend the necessity of inhaling through his nose to further inflate it. He would abandon his effort to blow up the balloon and hand it to the clinician for her help. Despite the strength of his motivation in repeatedly seeking balloons, and the combination of the visual model and verbal instructions provided by the clinician, Peter never learned this task. While he was able to function at the level of direct imitation through the visual modality, he failed when it was necessary for him to integrate both the visual and auditory modes simultaneously. This specific learning disability was repeatedly observed in other areas of performance.

The extent to which Peter attended to the details of play materials gave further emphasis to the impression that he experienced perceptual confusions. He continued to verbally identify the parts of a toy rather than identify its name or function. When playing with the hand puppets he would say:

P: Shirt. (Pause) Shirt. (Rubbing his finger across the entire shirt surface.)

C: Yes, that is the boy's shirt.

P: Buttons. (Pause) Buttons. (Meticulously tracing each button in a circular motion.)

C: Yes, those are buttons.

P: Jacket. (Pause) Jacket, jacket. (Rubbing his finger across the entire jacket surface.)

C: Yes, he has a jacket on.

While handling a toy truck, Peter would carefully trace the outline of the wheels and windows saying:

P: Tires. (Pause) Tires, tires. (Each time his inflection rises.) Window. (After a long pause while he continues to trace around the window) Window. Window. Window.

On two occasions Peter gleefully animated his play with the hand puppets and the puncho toy by feeding them from a nursing bottle which was full of water. While feeding BoBo, Peter showed marked confusion concerning body orifices by directing the water to its eyes, ears, and nose; however, he appropriately directed the water to the mouths of the rubber hand puppets. It was felt that this confusion with body orifices was a demonstration of his lack of the abstract attitude, as this particular toy presented a distorted body image, whereas the hand puppets, although disproportionate, were more reasonable representations of people. It was noted that Peter did not engage in the feeding play when the nursing bottle was empty, a situation also requiring the abstract attitude; whereas, when the bottle was full of water the feeding play was concrete.

In this and the ensuing months of therapy Peter manifest an intense need to maintain sameness through an ordered environment. Each day at the very moment of his arrival at Seaview, he would make every attempt to go directly to the therapy room. Whenever he encountered any delay a catastrophic reaction ensued in which he would scream, whine, and display aggressive and/or intrapunitive behavior. Although therapy was conducted on a regular basis no amount of verbal explanation seemed to satisfy him on the days when therapy was not scheduled. He would exhibit mounting panic, scream the clinician's name, and on several occasions it became necessary that he be brought to the therapy room to demonstrate to him that no one was present in the hope that this would assuage his panic. Once the therapy pattern was established and he came to understand when it was time to leave, it was equally as important for him to experience no delay departing. Perseverative behavior was demonstrated by his inability to shift from one set to another whenever and wherever changes or modifications in his routine occurred.

Second Month (14th through 28th session)

During this month Peter demonstrated his capacity to relate to the clinician. The quality of shared activities increased as he more readily gave and accepted play materials. Whereas previously he had destroyed or disassembled the clay or building block productions of the clinician, he now began to accept these and incorporate them in his play in subsequent sessions. Throughout this period, the intensity of his drive to come to therapy did not wane.

By the clinician reducing her verbalizations to single words or phrases expressed in a subdued, almost whispered, voice and by her emphasis on the use of gesture communication, Peter experienced longer periods of homeostasis, fewer catastrophic responses, and an increased attention span. Through a growing awareness and sensitivity to the subtleties of Peter's nonverbal behavior, the clinician was able to respond more appropriately, thus avoiding unnecessary frustrations and the accompanying catastrophic responses by providing him with success experiences at his level of functioning.

In contrast to the relative calm of the therapy setting severe catastrophic responses were observed in the milieu of the institution. During these outbursts he repetitiously screamed or wailed a word or two, his face became flushed and contorted, he rejected all physical contact with people, he became aggressive, flailing out indiscriminately, hitting his head with his hand, throwing himself on the ground, and in a kneeling posture he rocked with his arms held stiffly by his sides, his eyes closed, and emitted rhythmical vocalizations. The precipitating circumstances were not always discernible.

Throughout this period the focus of Peter's play shifted from clay to building blocks. His initial contact with the building blocks was to sniff them and trace their outlines. Entire sessions centered about the repetitious building of roads, bridges, and three-sided buildings. A disability in the area of spatial relationships came sharply to the foreground as Peter perseveratively made constructions which were functionally disproportionate. For example, when he built a bridge he was unable to conceptualize the height and width needed to pass a truck or figurine under it. When confronted with the reality that his truck was too large to pass beneath the bridge, after actually bumping the object against it and attempting repeatedly to force it through, he would carefully disassemble his construction and meticulously rebuild it only to meet with failure again. Peter exhibited an inordinate need to create symmetrical constructions. His method of organizing blocks into symmetrical forms demonstrated his ability to match blocks of the same form and size; however, he could not shift to the next level of functioning which required that he combine blocks in order to obtain the particular size he needed. When he experienced failure in not being able to attain the desired symmetry, he would disassemble his construction and begin again. Although he would not actively seek the clinician's help in this activity, he would accept her offer of assistance when she handed him an appropriate block.

During this period in which Peter was intensely involved in his play with the blocks, the frequency of his trips to the bathroom markedly diminished. There were also modifications in the ritualistic pattern previously observed. He abandoned the repetitious play with the bathroom door and its locks and frequently left the door open when he toileted. His bathroom sorties became purposeful, but his toileting was never entirely free from problems as illustrated by the following excerpt from the twenty-first session:

P: Push down! Push down! (Pause) Push down now! (Peter sits on the toilet squirming, jerking, and twisting about, unable to produce immediately.) Push hard! (With mounting panic as his voice rises in intensity and pitch) Push hard now! Push hard! (Every fiber of his being is now absorbed in his panic) I'm right here! (Pause) I'm right here! (Pause) Don't be afraid now, don't be afraid!

C: (Standing beside Peter, the clinician caresses his head and in a soothing voice says) It's all right. It will come.

P: It's all right now! It's all right! (Pause) It's all right! It will come! It will come! It will come!

(Peter continues to squirm, occasionally peering into the toilet bowl for evidence of a bowel movement. Throughout this episode, as with others, Peter did not manifest any behavior which could be described as pushing or bearing down.)

When Peter completed a bowel movement he would bend over which had become a meaningful nonverbal gesture communicating to the clinician that he wished to have his rectum wiped. There were attempts to encourage independence by offering him the toilet paper, but this was never accepted. It was noted that although he often wet his trousers elsewhere, this never occurred in therapy.

Unlike the prolonged periods of rocking which dominated his daily life, minimal rocking occurred during therapy. Periodically during some therapy sessions he would stop his activity, stiffen his arms to his sides, rhythmically rock five times, simultaneously emitting the repetitive vocalization, "uh, uh, uh, uh, uh," and then resume his activity. When the clinician imitated this particular behavior he would often interrupt his rocking pattern, momentarily smile or stare at her, and then resume his play. Similarly the clinician's imitations of other aspects of Peter's behavior gradually grew to have an immediate communicative effect.

The clinician gradually deemphasized verbal reflections and descriptions of Peter's play and increasingly relied on gesture communication, thereby lessening the demands for verbal language comprehension. This led to greater interaction with the clinician, thus enhancing the growing relationship. Through this extended involvement with the clinician it became possible to present Peter with specific language stimuli without threatening the relationship. Peter's disabilities came more sharply into focus as exemplified by the following excerpts from the twenty-second session representative of many similar exchanges which occurred during the course of therapy. The presentations were made under optimum conditions, with all extraneous stimuli removed, and with each presentation made in such a way as to effect clear-cut shifts.

(Wooden figures of a horse, a cow, and a pig are placed on the table.)

C: Give me the horse.

P: (Peter looks at the clinician and then at the farm animals on the table.) Horse?

C: Give me the horse.

P: (Peter's only response is to smile at the clinician.)

C: Horse. (With accompanying gesture of give me by extending her hand.)

P: (Still smiling Peter gives the clinician the cow and says) Horse?

. . . .

(A truck, a square block, and a cylindrical block are presented.)

C: Give me the square block.

P: (Peter hands the clinician both the cylindrical and the square blocks.)

C: (Replacing the blocks) Give me the truck.

P: Truck. (Handing the clinician the truck.)

. . . .

(A toy hammer, a plastic knife, and clay are set on the table.)

C: Give me the hammer.

P: (Peter first picks up the knife, corrects his error, and hands the clinician the hammer, smiles, and says) Hammer.

. . . .

(Three blocks of the same size and shape are placed on the table.)

C: Give me two blocks. (Said slowly with the hand extended.)

P: (Hands one block to the clinician and says) Blocks.

In spite of Peter's increased capacity to interact with the clinician he demonstrated dysfunction of attention to, and comprehension of, auditory stimuli. He attended to the clinician with direct eye contact but frequently failed to respond until the verbal request had been repeated several times, demonstrating his motivation but a delay in response. The degree to which he was motivated and in contact was seen in many substitute performances where he would make an effort to respond although it was not always correct. In addition, previously successful responses were perseveratively performed. There was no evidence suggesting any peripheral hearing loss as he had repeatedly demonstrated acuity for environmental sounds of minimal intensity. Every therapy session was replete with examples of a language comprehension disorder.

Third Month (29th through 39th session)

Peter was able to find his way independently to the therapy room, presenting himself at the door beaming from ear to ear. On the days when therapy was not in session he continued to be confused. The play patterns previously described continued with little variation.

Efforts to involve Peter in selecting his own play materials from the toy closet gradually reached fruition and replaced his interest in playing with the toy closet door and its lock. On several occasions he independently selected finger paint material, readily accepting the few limits needed in this activity. When finger painting, there was an absence of any inhibition associated with "messing." He joyously plunged his fingers into the paint jars and, with carefree abandon covering both of his hands, not only smeared the paint on the paper but on his face as well, as he made his usual attempts to sniff and smell. His actual productions were limited to linear expressions where the major focus was to spread the finger paint over the entire surface of the paper.

In all of Peter's play, but especially in his use of graphic media, the sterility of his play patterns was indicative of his inability to integrate, to symbolize, and to reproduce environmental experiences.

Given a box of crayons Peter examined them by sniffing each crayon and replaced it in the box exactly as he had found it. For several sessions he repetitively followed this pattern, making no attempt to use the crayons meaningfully. Gradually the clinician introduced their functional use. The following unusual episode illustrated the way Peter was able to reveal some of the hidden dynamics of his disability through his play and behavior.

Cognizant of Peter's need to trace the outlines of objects with his finger in order to perceive, and his delight in imitation, the clinician proceeded to crayon around the wooden figurine of a cow. Peter attended and when offered the cow imitated the clinician. While he traced the cow's outline, the clinician colored in her production. Rather than follow the clinician's model of coloring in the tracing, he independently selected a much smaller farm animal, the pig, and began to trace its form. In the midst of his tracing he suddenly stopped, began to scream, threw himself on the floor, pounded his head with his hand in one of the few explosive outbursts to be seen in the course of therapy. Having discovered that sudden movement was very distressing to him, the clinician moved slowly to join him on the floor and attempted to prevent him from hitting himself by placing her hands protectively about his head. He responded by pulling away, avoiding any physical contact. The clinician made every effort to attempt to communicate that she could not allow him to hurt himself and that she understood how upset he was. Peter finally acquiesced to the clinician's repeated gestured request that he return to the table. Immediately, the clinician reintroduced the cow with the hope of reestablishing contact through the reenactment of a previously successful experience with this animal. Peter accepted the clinician's offer of the cow and successfully traced around it. While tracing he said, "It's all right.....I'm right here......Don't be afraid.......You can do it now." Between these utterances, Peter would reach out and grab at the clinician in a desperate attempt to gain solace. It was interesting to note that these verbalizations were not spoken by the clinician but were delayed echolalic utterances of things apparently said to him during similar anxiety states.

With the successful completion of the tracing of the cow, the clinician guided him into other activities in which he had previously enjoyed success. Gradually, his distress was amelioriated.

As Peter had previously enjoyed playing with all the farm animals, including the pig, it appeared that this outburst was triggered by his attempt to act independently by trying to trace around the pig. If he had not had such difficulty with spatial relationships he would never have experienced the intense frustration in his failure to trace the small form of the pig with a large crayon.

Through crayoning activities in subsequent therapy sessions Peter demonstrated his capacity to match colors; however, in response to the verbal request for a crayon of a particular color he would fail to give the clinician the correct color. In his attempts to please and to comply with the clinician's verbal requests he made substitute responses, offering her any crayon. He continued to demonstrate auditory misperceptions in this and many other situations.

Whenever written material was present Peter would trace the letter forms. It was clear that he had not established the left to right concept as he invariably would trace from right to left. As long as all extraneous stimuli were removed and a visual model was present, Peter was able to separate figure from ground and, in his best possible performance, could copy single letter forms. With clay he was able to reproduce the more concrete forms of faces, lollipops, and stick figures. He enjoyed the perseverative practice of disassembling and reassembling these clay pieces.

Fourth Month (40th through 47th session)

Based on the nonverbal communicative bond established, the clinician became more involved with Peter in a reactive process made possible by the widening range of activities. This was in marked contrast to the early sessions characterized by his avoidance. Peter began to use a series of picture cards of common objects which he had discovered in the toy closet. On several occasions while leafing through the cards, he attempted to name the objects represented on each card. This activity provided a method for controlled observation of a facet of his expressive language ability without threatening the relationship.

Through the experience gained during preceding months of therapy, it was recognized that Peter required a structured presentation in all his activities in order to assure success and prevent catastrophic responses due to failure. Accordingly, whenever the cards were used, the clinician was careful to select only those cards which she felt reasonably assured Peter could name. When this was not possible, and he experienced a series of failures or manifest perseverative behavior, she would shift to another activity.

The following verbal interaction from the forty-third session illustrated his limited expressive ability, his delayed responsiveness, his echolalia, and the initial development of associational bonds.

(Peter begins to leaf through the pile of picture cards on the table, intermittently thrusting his fingers into his nostrils.)

C: You'd like to look at some pictures today.

P: Pictures? (Looks and smiles at the clinician.)

C: Uh-huh. (Presenting a picture of a ladder) What's that?

P: Ladder. (Smelling the picture and tracing the outline with his finger.)

C: Yes, that's a ladder. (Pause. Clinician then presents a picture of a balloon) What's that?

P: Balloon. (Continues to rub the depths of his nostrils with his finger.)

C: Yes, that is a balloon. (Pause. Presenting a picture of a lamp) What's that?

P: (No response is forthcoming as he dips his fingers first into his mouth and then deeply into his nostrils.)

C: What is this, Peter? (Pause) Mummy turns on the ....

P: Light. (Picking the picture up and smelling it.)

C: This is a kind of light. It's a lamp.

P: Lamp. (Tracing its outline.)

C: What's this? (Clinician presents a bell, to which Peter makes no response.) It goes ding-dong, ding-dong. (Pause) Do you know what it is? (Long pause) A bell.

P: Bell. (Tracing the outline and picking his nose.)

C: (Presenting a letter.) What's this? (Pause) Do you know what this is? (Pause. Providing an association) Mummy writes a..........

P: Writes.

C: You write a ....

P: Letter. (Continues to manipulate his fingers in both nostrils.)

C: Letter. That's right. Very good. (Pause) Do you know what this is? (Presenting a picture of a lamb.)

P: Donkey.

C: (Questioningly) That looks like a donkey?

P: Donkey. (Tracing its outline.)

C: Well, it's a little lamb.

P: Lamb. (His attention starts to wane.)

C: This one you know. (Presenting a picture of a lock) What's this? (Pause)

P: Key lock.

C: Yes, this is a lock. You need a key to open the lock. (Presenting a picture of a pencil) What is this?

P: Pen.

C: A pen or a pencil. (Presenting a very familiar object--a bicycle.) Here's one that you know. (Pause. There is no response so the clinician provides an association.) You ride home on your............

P: Bike.

C: Yes, your bicycle. (Presenting a picture of the sun.) What's this?

P: Moon.

C: The moon or the sun.

P: Sun.

Unlike any other play materials, the small uniformly-sized plastic sticks found in the Goldstein Scheerer stick test[1] served to stimulate Peter's curiosity. Although he was well-motivated, he could not reproduce, with or without the visual model, any abstract designs which incorporated more than two sticks. This activity was attempted many times with Peter never achieving beyond the level of a two-stick design. It was found that when he was confronted with such a task, sustained attention was markedly reduced and accompanied by increased fatigability, both of which reflected his lack of the abstract attitude. He was able to succeed at a more concrete level when he was presented with a task of sorting the simple geometric forms of circles, squares, triangles, and stars.

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[1] Kurt Goldstein and M. Scheerer, "Abstract and Concrete Behavior," American Psychological Association Monographs, LI, 9.

Fifth Month (48th through 58th session)

The therapy sessions had reached the point where richer and more varied experiences seemed to be steadily furthering the reactive process when, unfortunately, the sudden onset of a series of illnesses contributed to a rapid decline and generalized regression in all aspects of Peter's behavior. His attendance became highly irregular as he was beset with swollen joints and extremities, a severe attack of giant hives, and poor reactions to a variety of drugs.

His regression was characterized by a genralized euphoric state, periods in which he appeared dazed and out of contact, lethargy, prolonged periods of rocking which had not previously occurred in therapy, and the reappearance of extensive jargon. Entire sessions were again consumed with frequent unsuccessful trips to the bathroom. His usual pattern of going up and down stairs with alternating feet was replaced by the infantile pattern of ascending and descending one step at a time. The vast excursions and variability in his behavior ranged from sessions consumed by euphoric giggling and laughing in response to all stimuli to lethargic, trance-like rocking states where he appeared dazed and devoid of initiative.

It was the constant effort of the clinician during this regressive period to maintain the relationship through preventing catastrophic responses. Early shared activities were reintroduced with limited verbal content in the hope that the disintegrative process taking place could be checked at least in the therapy situation. These efforts were to no avail as Peter continued to disintegrate.

Therapy was terminated earlier than planned as his parents withdrew Peter from Seaview because they felt that his needs were not being met.

Case Summary

Medical History

In reviewing Peter's prenatal, birth, and early developmental history, there seemed to be a paucity of evidence which could account for the aberrant behavior so intensively manifest when he was three years old. It could only be speculated as to his parents' capacity to objectively recognize and identify deviant developmental patterns in infancy because of the lack and the inadequacy of available criteria. As the child of a medically sophisticated family, Peter was extensively evaluated by various medical and paramedical specialists. The similarity of their clinical observations of his behavior was striking; although they were diverse in their frame of reference and diagnoses. The numerous diagnoses made expressed a polarity of viewpoints. On the one hand, the peculiar symptom complex was perceived as an organic process suggestive of a disorder of the central nervous system; while on the other hand, the same evidence was viewed as being predominantly a psychogenic disorder. Medical evaluations revealed a series of soft neurological signs without a well-defined neurological disorder; hence, the prevailing diagnosis was childhood schizophrenia/autism. Consequently, therapy and the efforts for educational placement were based on this psychogenic hypothesis.

Previous Therapy and Educational Experience

Peter received short-term psychotherapy (4:0-4:8), two attempts at nursery school placement (4:8-5:2 and 5:11-6:11), and individual speech therapy (6:7-7:7). Those who worked with him reported minimal gains but no major modifications in his behavior patterns were effected.

Attendance at Seaview

When Peter was eight years and nine months old he was admitted to Seaview on a day care basis.

The twelve months of his attendance were studied and revealed that his specific, unique behavior patterns which were identical with the descriptions provided by those persons who had previously worked with him were conspicuous in their continued persistence. These included his generalized lability, his all-pervasive need to rock, his apprehensiveness about heights and the unfamiliar, his preoccupation with doors and locks, the perseverative nature of his behavior, and the extent of jargon and echolalic speech.

Experimental Therapy

Observations and impressions gained during the fifty-eight sessions of experimental therapy were as follows:

Nature of the Relationship

The clinician had few opportunities to reflect feelings and was limited to the description of Peter's behavior because of the sterility and perseverative nature of his play patterns and the absence of speech. Over the course of therapy it became apparent that he had a specific language disability which prevented his comprehension of verbal reflections; therefore, in order to become involved with the child, nonverbal communicative techniques were employed. Through the imitation of Peter's motor behavior, the clinician was able to communicate her acceptance, and in a general atmosphere of permissiveness with only a minimum of restrictions, Peter was able to tell, through nonverbal modes, his fears, anxieties, problems, strivings, and disabilities.

The clinician found that Peter's anxiety and diffuse state of apprehensiveness were markedly reduced by avoiding all quick and sudden physical movements, by providing clear-cut shifts between activities, by speaking in a quiet voice, and by lessening the demands for language comprehension and performance.

A positive force was experienced in a growing relationship which found its expression in the strength of Peter's motivation to come to therapy, the significant reduction of his rocking behavior during therapy sessions, the absence of enuretic behavior in sessions, the marked reduction of jargon and increase of echolalia, the reduction of the frequency of catastrophic responses with the subsequent increased capacity to attend, a growing appropriateness of his affective expression, and the giving and sharing of his affection and play materials. Unfortunately, the last few weeks saw Peter become physically ill and steadily disintegrate to the point where his total functioning was poorer than when initially seen.

Perceptual Processes

Peter's responses to external stimuli which were observed in both structured and unstructured situations were outlined as follows:

Olfactory.--The regular and perseverative pattern of smelling animate and inanimate objects by alternately sniffing through one nostril and then the other was extensively observed.

Gustatory.--Active rejection of certain foods suggested that there was some capacity for discrimination in the gustatory modality. Although there were minimum mouthing and sucking activities, there was a pattern of habitually manipulating his tongue by extending it to lick his chin. Licking and wetting his fingers, he would repetitively and alternately thrust them into his nostrils and back to his mouth again.

Tactile-kinesthetic.--Peter depended heavily on the use of the kinesthetic mode, demonstrated in the way he initiated contact with an object or a picture by carefully and repetitively fingering and tracing its outline. This perceptual modality was used as a supplement to other modes in his efforts to know.

Response to Pain.--Although Peter was unable to verbally communicate his bodily discomforts, one could frequently ascertain the painful stimuli through close observations of his movements and through his ability to localize. His threshold and tolerance for any discomfort was extremely low and usually inappropriate in proportion to the stimulus as he invariably overreacted by rocking and screaming.

Visual.--There was no evidence to suspect the adequacy of his visual acuity. Peter was able to match and sort objects according to color, size, and shape.

Auditory.--Acuity was evinced by Peter's attendance to and localization of environmental sounds of minimal intensity, and his overt rejection of intense stimuli.

Motor Behavior

No defects in gross or fine motor activities were observed; however, Peter did not engage in many activities requiring social learning appropriate for a boy of his age. Therefore, there was a distinct unevenness in his motor performance. The greatest deficits were seen in activities requiring language comprehension usually associated with fine motor activity. His most outstanding motor performance was the success he experienced in riding a standard two wheel bicycle to and from Seaview accompanied by his mother.

Vestibular Functioning.--While Peter did not enjoy or seek antigravity play he would engage in prolonged periods of rocking without any untoward effect on his equilibrium.

Linguistic Functioning

Receptive.--Peter's best level of performance was in response to standard requests such as "Stand up," Close the door," "Put on your coat," "It's time to go." This appeared to be conditioning rather than comprehension of the symbolic aspects of language. He had some limited comprehension for verbal language as long as it was concrete, immediately related to his activities, and free from complex, lengthy, or abstract constructions. Vast confusions were observed when the demands for language comprehension exceeded the level of the most common nouns and a few verbs. He repeatedly manifest problems in symbolic processes necessary for the integration of numerical concepts and written and printed material. Peter was noticeably more responsive and functioned with better understanding when simplified gesture language was used without accompanying verbalizations.

Expressive.--An examination of the peripheral oral mechanism revealed no structural abnormalities.

Peter's expressive capacities were impoverished, lacking in symbolic representation through gesture, speech, drawing, or writing. Although he was able to express his basic needs for food, water, and toileting through the use of single words occasionally accompanied by specific bodily movements, their occurrence was infrequent. Echolalia, delayed echolalia, and jargon were his most prominent expressive efforts. His spontaneous utterances were limited to nouns or exact delayed echolalic reproductions of adult phrases expressing a specific need. Occasionally, he demonstrated the capacity to relate certain words and phrases with specific situations and their associated feelings without the actual understanding of their precise symbolic meaning. As a result there were many inappropriate and erroneous spontaneous productions made. When using echolalia, both his articulation and voice quality were normal. Periodically, there were spontaneous utterances of garbled speech and jargon with a sing-song quality which had no discernible or purposive communicative value but seemed to function as an autotelic activity. There were times when the sing-song jargon would have a recognizable melody and rhythm. When Peter's efforts to communicate a need were not immediately interpreted and responded to he would whine, cry, or scream; although decidedly inadequate, nevertheless communicative.

Time and Spatial Orientation

The only evidence of his awareness of temporal relationships was seen in his distress when the ordered events of his daily routine were changed. Unable to tell time, Peter was, however, frequently successful in establishing time cues from the routine events and activities in his environment.

Initial exposure to new spaces was met with observable apprehension; however, he demonstrated geographical orientation through his appreciation for the permanence of objects. He failed to make the distinction between the permanent properties of objects and their transitory relationships. This dysfunction was repeatedly observed in his inability to combine blocks in space so that he might obtain the particular proportions required for a functional structure. As Peter had difficulty in the unification of information from different sensory modalities, it was assumed that he had inadequate ideational and symbolic representations of absent objects.

Reaction Time

Peter's reactions or responses to sensory stimuli were highly variable. When engrossed in an activity he would react quickly to extraneous stimuli whether visual or auditory. While heightened distractibility for extraneous stimuli was operant, at the same time he would paradoxically present an extremely delayed reaction by overattending to certain stimuli. This was particularly noticeable in the absent or delayed responses to language stimuli. A generalized depressed reaction time was prevalent in all areas of performance.

Learning

Attention.--In areas where Peter had previously experienced success, he was well-motivated and demonstrated sustained attention to the activity or task. In unstructured situations he would perseveratively attend to the details of play materials, and unless a model was provided to facilitate a shift, he would continue to overattend. This overattention to details impeded the development of his ability to generalize. The intensity of his attention to goal directed activity, once initiated, was invariably of such an all-consuming nature that he would vigorously reject any interference with his course of action. The regular occurrence of substitute performances poignantly demonstrated his capacity to attend to the clinician.

Imitation.--Functioning at the same level of performance which enabled him to echolalically reproduce words, Peter had observable delight in other imitative activities. He enjoyed imitating simple gross body movement, fine movements of the oral mechanism and individual phonemes. However, his performance never exceeded the level of imitating a single action as he was unable to retain any sequence of actions. His performance in an imitative task broke down at the point where two or more body parts were manipulated simultaneously or where it was necessary to integrate two sensory modalities. In the copying of abstract designs Peter could reproduce simple forms involving two sticks, and only those designs incorporating more than two sticks when he could make associations to common objects.

Memory.--Some of Peter's auditory memory functions were intact as exemplified by his ability to reproduce melodies and his echolalic reproductions including the original speaker's exact rhythm and intonation patterns. Highly personalized and meaningful words, although infrequently produced, demonstrated some memory function. When simple associations were provided, it facilitated recall and performance. His predominant dependence on the kinesthetic and olfactory modalities suggested his reduced functioning in the areas of visual memory.

Problem Solving.--Because therapy was not task oriented, there were few opportunities to observe problem solving behavior.

However, in his play Peter frequently demonstrated a random trial and error approach which occasionally resulted in accidental success. Despite these successes it was as if he was unable to recognize the existence of meaningful patterns of relationships as he would continue to use a trial and error approach, further demonstrating the impedence of learning through memory dysfunction.

IV-454

Case History of Jonathan

Date of Birth: 10/25/51

Family History

The following is a compilation of many clinical reports of information concerning Jonathan's family. Both of his parents were described as coming from privileged backgrounds. Jonathan's father was reported to be "an intelligent, ambitious man immersed in his law profession." He was twenty-eight years old at the time of Jonathan's birth.

Jonathan's mother was described as "having much in the way of material comforts, but inadequate affection in her early childhood." It was reported that "she admitted a poor relationship with her mother and a dependent relationship upon her father." Her father had been a prominent lawyer who had had a psychotic episode when he was fifty-four years old for which he was hospitalized for two to three months. It was said that "he was treated with electric shock, and had an excellent recovery." The psychiatric diagnosis was unknown. Two years later he died of heart disease. Jonathan's mother reported that she had been "emotionally traumatized" by her father's sudden death only five days prior to the birth of her first child.

At the time of Jonathan's birth his mother was twenty-six years old. He was the second of three children. His older brother was four weeks premature, weighed five pounds, six ounces at birth, and reportedly developed satisfactorily. He was two years and three months older than Jonathan. Jonathan's younger brother was six weeks premature and weighed five pounds, twelve ounces. It was reported that "he was kept in an oxygen tent for sometime" as he suffered from atelectasis at birth. He was four years and eight months younger that Jonathan and was described as lively, outgoing, and friendly.

Birth Record

An examination of the hospital records revealed that the antepartum course was normal. Gestation was noted as premature at thirty-seven weeks. The duration of labor was five hours, forty minutes; the presentation was vertex. A local anesthetic was administered, together with gas and oxygen. The mother's blood group was B, Rh positive. A medial, lateral episiotomy and repair were performed. No postpartum complications were noted.

The infant's birth weight was five pounds, fifteen ounces and he was described as an apparently normal male infant.

Infancy (First-Second Years)

For the first three months Jonathan was breast fed. His mother reported that she made vague attempts at scheduled feedings. She felt that he nursed much better than her first child but she ascribed this to her greater facility in handling a nursing infant. Jonathan was weaned from the bottle to the cup at approximately twenty-one months.

Jonathan's mother recalled that during his first few months he appeared so red that she called him "my little lobster." His parents felt that he was an unusually quiet baby as he made no demands and never seemed very alert or active.

In retrospect, his early pediatrician stated:

> ". . . It is my recollection that Jonathan looked normal at birth. By the time he was about two months old I began to suspect his behavior was abnormal, i.e., his motility was limited. I suspected that he could not see properly. . . . After a short time I believe I told his mother that I felt that Jonathan was a retarded child. There were no demonstrable illnesses preceding my observations of his abnormally slow behavior. . . ."

When Jonathan was eighteen months old, the family pediatrician reported that he had a very severe attack of measles with a high temperature. His mother described him as being "miserably sick," but without convulsions.

According to the account of his parents, Jonathan's motor development was delayed. He was thirteen months old before he sat without support. At about eighteen months he was "cruising" or walking about holding onto the furniture and walls. When he was twenty-five months old, he experienced great difficulty walking, falling repeatedly, and stopped walking for six months. This was during the wintertime when, through necessity, he was placed in heavy outdoor clothing.

When Jonathan was one year and eight months old the family moved to another state where they consulted a new pediatrician, although they maintained their contact with Jonathan's original pediatrician.

The family's new pediatrician could not provide a detailed report on Jonathan, but recalled:

> ". . . At that time I observed that his behavior was deviant. It was only with the greatest persuasion that we were able to get his father to consult a psychologist--who was unable to establish any rapport with Jonathan, and again, I must rely on my memory, agreed with me on a tentative diagnosis of autism or schizophrenia. . . ."

Jonathan's original pediatrician provided the following comments in reaction to the diagnosis of autism:

> ". . . It was about this time that the family moved to another state. Several months thereafter Jonathan's mother told me that a physician suspected that Jonathan was a childhood schizophrenic, that is, a type of autistic child as described by Kanner. I disagreed with this diagnosis as I do today for two reasons. 1) I regard Jonathan as a retarded child who might or might not have had difficulties seeing. 2) Even if the diagnosis of schizophrenia was correct, I felt that the net results would be the same as if the diagnosis was severe mental retardation. My experiences with these severe autistic children has been that after much expense and treatment for all practical purposes the children must be regarded as mentally retarded."

In describing Jonathan's prelinguistic behavior, his mother recalled that he showed little interest in the attention which he received. He did not raise his arms to be picked up. He was extremely sensitive to noise, preferring toys and activities which did not involve sound. His mother stated that she could not cover his with a blanket when he was sleeping without waking him. He did not attend or in any way indicate his recognition of environmental sounds with the exception of music, and his parents felt that he had only limited understanding when they talked to him.

Linguistically, his parents reported that he said a few single words which were incomprehensible such as "ga," and only one or two that were meaningful such as, "cookie," and "bye." On single occasions he would repeat the last two words that his mother said to him, such as, "am good."

Jonathan's mother provided the following commentary regarding his infancy:

> "As a small baby, Jonathan was always very 'good'--undemanding and complacent--also unresponsive. The first thing that we noticed was no babbling or desire to sit up alone--also no recognition. He seemed to have to be very close to things and to have to feel them. Then everything went into his mouth. He manifested a tremendous fear of any new situation, person, or object. I also recall how puzzling it was that I was unable to distract, pacify, or console him in any way. My singing especially upset him. Yet, in his early years, he was in general a pleasant child--not hyperactive or wildly destructive. His lack of speech was our prime concern."

Third Year

As Jonathan's visual acuity had been suspect for sometime, the family pediatrician referred him for an ophthalmological examination when he was three years old.

Ophthalmological Examination

> ". . . At that time I was told that he was mentally retarded, and my observation of this verified the history. He was quite sluggish, both mentally and physically, and had the expression and facies of a mentally retarded child. As I did not have much success in examining him in my office, he was hospitalized, and under general anesthesia an atropine refraction was done and the fundus examined. At that time his eyes showed normal fundus for a severe myope with some choroidal stretching, but good macular areas. Glasses were given to him at that time, and he seemed to do slightly better with his glasses on."

During the first few months of his third year, Jonathan presented symptoms which were later thought to be a convulsion. He fell to the floor in a room where he had been alone. When his mother heard him she ran in to find him struggling on the floor, choking. When the doctor arrived he had fallen asleep. He was found to have a swollen epiglottis and tonsils, and was given Penicillin. He had recovered by the following day.

Otolaryngological Examination

When Jonathan was 3:7, the family pediatrician referred him for auditory assessment because of his questionable acuity.

> ". . .On examination, I could determine no infection in his ears though they reflect a little stasis at present. His tonsils are moderately enlarged and show slight chronic infection. It is very difficult to tell how much or how well this child hears. I feel certain he hears considerable, but he may not be able to interpret words correctly. Because of his near sightedness and his inability to get words or sounds correctly, he is not sufficiently interested to try to imitate, and consequently does not talk.
>
> "I advised his mother to take him to a speech and hearing clinic. She was inclined to wait until he was a little older, but I felt they could gain a lot by having him there for their observation. It may be necessary for him to have a hearing aid. She has agreed to try this suggestion."

Jonathan's parents did not follow this recommendation. During the same month his parents sought help at a community child guidance center. At the time of the intake evaluation, Jonathan's mother reported his status as follows:

> "His vocabulary was five to ten words--he never used words spontaneously, and would repeat only occasionally. He was not completely toilet trained. He was unamenable to discipline. He had many food 'fads.'"

Psychological Evaluation

When Jonathan was 3:11, the center's psychologist found him inaccessible to testing. The following conclusions were made after six observational sessions:

> ". . . An atypical child--his behavior being qualitatively different from that of a child who shows only a deficit in intellectual development.
>
> "The difference lies in Jonathan's complete lack of social responsiveness; his inability to imitate; his lack of interest in material which the normal child finds provocative or distracting; his disregard of language as a way of communicating; and, above all, in his continued repetition of, and preoccupation with, isolated routines: i.e., fitting round objects into

holes; or skillful manipulation of marbles in his mouth; almost orgiastic squeezing, scratching and bending the head of a rubber doll.

"The neuro-motor aspects of Jonathan's behavior are characterized by precision, neatness, coordination and discrimination. These qualities are absent in children who suffer from devastating cerebral injury. There is no overt evidence even of selected injury except by inference; i.e., Jonathan has a visual defect for which he wears corrective glasses, and his gait is atypical (he walks toeing in). These are constitutional defects and deviations from the norm. Since Jonathan responds selectively and erratically, it was not possible to establish whether he also had a hearing loss.

". . . The psychiatric diagnosis was also more on the basis of eliminating certain considerations than finding a specific diagnosis."

Psychiatric Diagnosis

"He does not appear to be mentally retarded. Sight seems adequate, at least with glasses. He apparently has good hearing, or at least enough, so that is not the primary handicap. He appears to be in good general physical health, without evidence of stigmata, seen in constitutionally handicapped children--except of course the question of sight and hearing. The primary factor appears to be that he is essentially autistic with limited evidence of relationship with others."

Fourth Year

Jonathan was seen by the psychologist at the child guidance center for thirty-three weekly sessions. (4:0 - 4:8) His mother was offered the choice of treatment in a group with a psychiatrist, or individual treatment with a psychiatric social worker. She attended the group for awhile, and then chose individual therapy. The psychiatrist felt that she was a very frightened and bewildered young person who had to be treated more on a supportive than interpretive basis.

During the first few weeks of treatment at the center, Jonathan was reevaluated by the ophthalmologist.

Ophthalmological Reevaluation

> ". . . He was doing very well at home. He had some slight muscle imbalance of an exophoria for near, but he seemed to get around quite well and he was smiling. Much more cooperative and in general had advanced considerably in less than a year."

When Jonathan was 4:5 he had a more severe convulsion in the presence of both his mother and father. It was reported that he fell to the floor, seemed to be choking, became incontinent of urine and feces, and vomited but did not show tonic movements of his arms and legs. His father picked him up and rushed him to the doctor's office. He was again found to have a swollen epiglottis and tonsils and a temperature of one hundred and four. He was given Penicillin and a drug to control the convulsion. He went to sleep and upon waking the next morning seemed to be all right.

Summary Report of Child Guidance Center

The center summarized their course of treatment of Jonathan and his mother, covering a period of eight months, as follows:

> "Jonathan retained much of his compulsive, stereotyped behavior. There was no evidence uncovered of a hearing loss. His vocalizations continued to be sparse; occasionally he would repeat a word. The greatest change was toward more spontaneity, expansiveness, and a more genuine awareness of people. Some purposeful and meaningful behavior was noted in the way he turned lights on and off, found the place where cookies were kept, and the control with which he helped himself to them.
>
> "More permanent changes in the positive direction were reported by the mother. According to her, Jonathan was toileting himself; imitating actions; sharing toys with his brother; actively seeking attention from his father; showing pleasure in receiving gifts at a birthday party. She also reported what seemed like acting out behavior--not wanting to go to bed; urinating and defecating in his room during a forced nap. When his mother recognized the underlying cause, this behavior was modified.

> "Though his mother kept her appointments, she made minimal use of the counselling opportunities of the guidance center. She was cognizant of an almost compulsive need to find a specific cause for Jonathan's deviancy and would on one occasion or another approach the different members of the clinic to discuss specifically whether it was brain damage, an obscure disease, schizophrenia, or a physical illness. Despite this orientation, she did not mention for sometime that two years prior to coming to the clinic Jonathan had two convulsions accompanied by very high fever.
>
> "When, during treatment, his mother reported that Jonathan had had another convulsion under similar circumstances, she did not seem unduly disturbed.
>
> "Both the psychiatrist and psychiatric social worker who had prolonged contact with the mother felt that she was unhappy because she was a parent of a deviant child rather than being primarily unhappy for the child himself. At times the mother acted as if the clinic had answers but they concealed them from her.
>
> "Treatment was discontinued when Jonathan was 4:8 because the mother expected a new baby. Then Jonathan's older brother had the mumps and Jonathan was expected to come down with them. The family was supposed to contact the clinic to continue with treatment, but did not do so. Since then the mother has called and discussed with the psychiatric social worker the feasibility of trying speech therapy on the recommendation of her new pediatrician. . . . We never discouraged the mother from seeking help from specialists, and it is to her credit that she took Jonathan to an eye specialist who was able to correct his vision appreciably. . . ."

As Jonathan's parents became increasingly alarmed concerning his lack of language development, he was referred to a metropolitan speech and hearing clinic when he was 4:11.

Otolaryngological Evaluation

"All findings in these areas appear grossly normal."

Speech Evaluation

"Speech not developed. Voice analysis--normal for age, does much screaming."

Psychological Evaluation

> (Merrill-Palmer--Play activity)
>
> "Could not administer test adequately because of Jonathan's inattention and wandering about the room. An estimate based on the little work he did do places him in a mental defective

range. He is quite expositional, dropping material on the floor and ignoring it, and opening the door and leaving. His play activity involved going to a desk across the room and picking up a bottle of ink to look through. The activity was deliberate, and not chance, crediting him with foresight and planning. Crying had little affective coloring, but seemed only like sounds emitted for his own interest. He took interest in many stimuli, but no delight in any. At one time he appeared to want to take my hand and made a fleeting attempt to do so. When urged, however, he slapped my hand and wandered away. Functioning is on a mental defective level although he appears to possess a high level of intellectual potential. Appears to be autistic, suggesting childhood schizophrenia in a child of possibly borderline to dull normal intelligence. Chronological age: 59 months, Mental age: 37 months. Performance: 63rd %ile.

"Diagnostic Impression.-- 1) Retardation. 2) Autism.

"Recommendations.--Carefully guided play therapy."

As extensive travel would have been required, it was not possible for the family to follow this recommendation.

Fifth Year

When Jonathan was five years old his parents sought further pediatric advice. At the time his mother reported to the pediatrician that he fed himself but was selective in his diet. He did not dress himself. He spent long periods of time playing with toys by himself. Although he obeyed commands, he was described as destructive and restless. In reviewing the pediatric notes, Jonathan's physical examination was essentially negative with the exceptions of myopic vision and a tendency to toe in when walking. The pediatrician felt that Jonathan was essentially autistic, and recommended speech therapy for him and guidance for his parents.

Unable to resolve their dilemma, Jonathan's parents continued to pursue any possible resource which might help to explain his aberrant behavior. When he was 5:4, they contacted a well-known hearing clinic in a large, metropolitan area.

Audiological Evaluation

"It was not possible to employ pure tone audiometric testing to evaluate this youngster's hearing. However, subjective audiometry indicates that the youngster could hear most toy noisemakers, free field, and soft speech at relatively normal levels. He also responded to pure tone stimuli, free field, from 250 to 4000 cycles per second at the 20 decibel level. It was our impression that the child's hearing was essentially normal.

"However, in order to check these results more objectively, an appointment for hearing evaluation with the use of galvanic skin response technique was made....On the day the appointment was scheduled, the mother called to cancel the test. . . ."

The following month, when Jonathan was 5:5, his pediatrician referred the family to another speech and hearing clinic in a community rehabilitation center. . . .

Speech and Hearing Evaluation

"This five year old youngster seems to show symptoms of Early Infantile Autism. He relates to objects and plays with them in a desolatory but fairly purposeful way, but shows an almost complete lack of ability to relate to people. He avoids eye contact with people, will make use of the hand to give him something he wishes but shows neither pleasure nor anger, only an effort at avoidance when attempts are made for contact with him. His mother reports that he seems not to distinguish between various people. The other characteristic of autism which he shows is the inability to adjust or adapt himself to change or to external stimuli. He is said to be a cautious child who is easily frightened. He has extreme temper tantrums and screams at night, being readily wakened. Although for a long time he resisted being rocked or cuddled, he now submits occasionally to affection and he enjoys kissing his blanket. He also seems to get pleasure from whirling and repetitive movements. He has a bowel movement when taking a nap and he enjoys playing with his feces. Although it is impossible to obtain a valid intelligence rating because of his lack of contact and lack of adaptability to direction, one hazards a guess from his cleverness in obtaining what he wants and from the intellectual level of some of his play that he is probably potentially at least average in intelligence.

"Frequently he uses a high pitched but meaningless phonation. At our center he used no words meaningfully and called no objects by name, but he would repeat by rote for his mother several one syllable names of objects, and on one or two occasions recently his mother reported that he had said single words in meaningful situations. His hearing was tested by free

> field technique in a soundproof suite and he responded both to voice and to music at normal intensity so it may be assumed that his hearing is within normal limits. . . .
>
> ". . .Jonathan's great need is for intensive psychotherapy supplemented by therapy for his mother as well. This they did receive at a child guidance center for a six months period last year, and it is recommended that they return to this center for further therapy. . . . While we, of course, have speech therapy available, it would be almost impossible for Jonathan to benefit from it unless he is able to relate to a therapist. The most we could offer at this time would be a trial period in a small group of children with delayed speech. . . . to observe his reactions in this group, and to add more intensive speech therapy as Jonathan shows himself able to profit from it."

Jonathan's parents neither returned to the child guidance center nor took advantage of the alternate suggestion of a program of speech therapy.

Psychiatric Consultation

When Jonathan was 5:6 his parents arranged to have him seen for a diagnostic work-up by an internationally famous child psychiatrist, recognized as a leading authority on the psychosis of childhood.

> ". . .I noted only that it seemed a rather typical history and clinical picture of childhood psychosis with predominently autistic features. I felt that primary organicity (involvement of the central nervous system) could be ruled out."

When Jonathan was 5:8 his pediatrician reported that he had yet another attack of "croup." His mother stated that at four-thirty in the afternoon he was playing happily. At five-thirty he started to cough, and at six-thirty he could not get his breath. When the doctor arrived he again reported a swollen epiglottis and temperature. He was treated with Penicillin, slept through the night, and had completely recovered the next morning.

9

When Jonathan was 5:10, his parents sought an additional pediatric opinion.

Pediatric Evaluation

> "Jonathan was first seen when he was almost six years of age. He came with a diagnosis of mental retardation, but autism and schizophrenia had been suggested by other physicians. The parents were never quite satisfied with the examinations.
>
> "He has a history of two febrile convulsions.
>
> "He ate well as an infant, then developed food dislikes, and now has a somewhat limited diet. He can feed himself.
>
> "The parents reported that he is compulsive, does not play constructively, is obsessed with various ideas, does not play with children, shows little affection towards his family.
>
> "In my office he was anxious, quiet, not uncooperative. He is of nice appearance, and on the whole has a pleasant personality. He has peculiar behavior patterns and bizarre gestures. Physical examination and examination of soft neurological signs was entirely normal.
>
> "He said three or four words when pointing to pictures. This child does not converse much, but is not deaf. His speech has improved considerably in the past few months.
>
> "Jonathan is attending a private school. He is in a special class with three other children. He is difficult and has unpredictable behavior, but seems to have made some kind of contact with the teacher.
>
> "His father is a lawyer who travels a great deal, so much of the responsibility for the care of Jonathan has fallen on his mother. She feels lost and helpless in handling him.
>
> "Recommendations.--Referral to a child psychiatrist."

Jonathan had attended a nursery school program for two years between the ages of 3:11 and 5:11. The headmaster's report was as follows:

> "The first year we had Jonathan in the three year old group, and the second year he was in the four year old class. He made some progress socially, but he was never performing at the level of his classmates. He made no effort to speak unless someone made it a point to get an isolated word from him. He learned to conform within a very limited range of activity. Jonathan was unable to act with his classmates at their level although at the end of the second year he began to display a desire to be a part of the group. Most of the time his pattern of action was non-gregarious and in the nature of attention seeking. He would throw away his glasses, or get himself unnecessarily grimy, or perhaps if his class were moving into the building he would go in the opposite direction.

"We felt at the time that he could learn but since we were not able to give him the attention he needed, I advised his mother that she should find some school which could give him that attention. . . .

". . . I might add that our relationship with his mother was cordial. We had the impression, however, that she found it difficult to face the realities and certainly had no understanding of the problems which seemed to be in the picture for Jonathan. . . ."

Sixth Year

Following the recommendation of the pediatrician, Jonathan was seen for evaluation by a child psychiatrist at a large urban hospital when he was 6:1.

Psychiatric Evaluation

"Jonathan is a six year old boy who the referring pediatrician has tentatively diagnosed as autistic. He is accompanied by his mother and father, and the whole examination and interview was carried out in the presence of all three.

". . . The parents both make a very good impression being intelligent, warm, handling the child very well, and seemed deeply interested in him. . . .

". . . His speech did not progress until he was 5:6. Since then he has started to say words spontaneously, usually single words of the type that are used by most children between 18 and 24 months. He uses no pronouns, and there is still very little babbling. . . .

". . . His present behavior is withdrawn, playing quietly by himself, mostly by spinning bottles or filling them with water and looking through the bottles at objects. He seems to be aware of boundaries, does not attempt to get off the curbing without permission. He is fearful of anything new, but with a calm persistence on the part of his parents he can overcome this fear, and thus learn, for instance, to ride a bicycle. He sleeps through the night, but frequently wakes up screaming. This, however, has diminished lately, and for the most part he is a placid sleeper. However, he frequently has temper tantrums. They were at their worst from the age of three to four, occur frequently when he is frustrated and will continue until he gets what he wants. Sometimes, however, they seem to come out of the blue and may be very severe indeed. These, too, have diminished in the past few months.

". . . The parents think that today he is unusually apathetic and pale, and may still not have recovered from the cold which must have been associated with the croup.

"This is a listless, pale, fairly well-nourished, normally developed boy of six who clings to his mother, lies about on the chairs or leaning on his mother. He made a mild resistance to being taken on my lap, but then quickly submitted. He was apathetic, had a doughy texture to his skin and muscles, and completely melts in my lap, and then almost suddenly begins to resist and struggle, making gutteral noises, but again quickly gives in and submits to being held. The eye movements are normal, facial expression except for apathy is normal, and there are no adventitious movements in the face or tics in the body. However, when he is playing about the room, and especially at the sink, he frequently shows hand waving mannerisms and short periods of ecstatic jumping up and down. His drawings are limited to scribbles, but when a crude human figure is drawn for him he pulls the examiner's finger over to the face and points out correctly and states, 'eye,' 'nose,' and 'mouth.' Upon direct testing he sometimes will repeat this on his own body or the body of the examiner. He used a number of words in my presence, and on one occasion used a three word sentence which delighted his parents.

"Impression.--It is my impression that this is a schizophrenic child with autistic features, but showing at the present time a tendency to 'improve.' He is acquiring language which is appropriate. There are, however, the questions of the convulsions and croup attacks which sound remarkably alike, together with the severe temper tantrums and screaming out at night, so that the question of a convulsive disorder may be seriously considered, and therefore, an EEG must be obtained. This might seriously modify the prognosis and would certainly change the treatment approach.

"Meanwhile, however, the recommendations are as follows. First, he should be entered into the school where his parents have made application if he is accepted. Second, he should be placed back on Compazine which had been prescribed by the referring pediatrician, but through a misunderstanding by the parents was not given until last week and then stopped with the attack of croup. They had the impression that he was improving under the drug. Third, he should have an EEG, preferably in his own neighborhood, as soon as possible. Fourth, the family should keep in touch with the referring pediatrician for management and guidance. Fifth, if this program does not result in sufficient improvement during the winter, residential placement should be considered."

The following month electroencephalographic tracings were made.

Electroencephalographic Studies

"Sedation--60 mg. of Seconal. The child was very upset, crying very hard, and never went to sleep. The waking record is obliterated by a good deal of muscle action potential and movement artifact. It is not grossly abnormal as far as it

> goes, but that does not prove too much. Suggest repeat with larger amount of sedation. . . ."

Two weeks later, a second attempt was made.

> "Sedation--3 grains of Nebutal. The record during sleep consisted first of medium to high voltage spike activity often seen as the result of barbiturate sedation, and in addition disorganized medium voltage slow wave activity ranging from 2 to 5 cps. bilaterally. Later on the slow wave activity became dominant and the spikes disappeared. There were no focal or lateral differences, no depression of activity, and no paroxysmal patterns at any time. The child was too fast asleep to obtain a waking record after the end of the sleep record.
>
> "Impression.--Normal sleep record for this age."

Jonathan continued to be seen annually by the ophthalmologist.

Ophthalmological Reassessments

> "Both times his fundus examination was normal. The near sightedness stayed pretty much the same, so that while we changed his glasses slightly to improve his vision, there was no marked change at any time. During both examinations he was more cooperative. He had developed and improved generally as far as I could see. . . ."

When Jonathan was 6:1 and again when he was two months older, his pediatrician reported that he had two additional attacks of "croup" marked by choking, a swollen epiglottis, fever, and the rapid onset and the rapid recovery previously described.

During this period Jonathan was enrolled in a special tutorial school (5:11 to 6:7). The following observations and comments were made by his teacher:

> "It is a ritual when Jonathan arrives in the morning to be reminded to put away his wraps. He knows his cubby, but does not recognize his name. He immediately plays with the wooden beads for awhile. If I insist he put them away after a short while and engage in other activities, he always cooperates, but with indifference. He experiences his greatest success in block

> building. That is, he enjoys it and has exceptionally good sense of balance.
>
> "Jonathan follows the routine well. After milk time (he takes water) he immediately goes to his cot for rest time. Recently he has been removing his shoes and socks during rest time. He toilets independently. He needs help washing his hands, and is afraid of hot water.
>
> "He will participate in group games, circle games, but will not stay to completion. He insists on being in the center at all times regardless of the game. He responds to music, will clap hands in activity songs; however, he never sings. He likes to play notes on the piano, and it is of interest to note that he always plays low 'D' on the scale over and over. He will pull the teacher's hand to the piano or any other object he wants. He never speaks voluntarily. He is very respectful at prayer time, and says 'Amen.' He repeats a simple flag salute, 'Red, white, and blue, we all love you.' He may fuss once in a while, but has cried tears only once.
>
> "He has shown growth in many ways since admission. He enjoys being in the group, has gradually participated in some of the group activities. Often he will imitate the other children. He likes the routine of the school program, and if at any time we deviate he objects. Although his span of interest is short, he will participate more frequently now. He still spends time manipulating round objects, although he does not do this as often as when he first came. He will cooperate occasionally in repeating words we encourage him to speak. He enjoys an occasional rough housing with the children, and will laugh and giggle with delight. We enjoy having him with us in the group."

Unable to manage Jonathan's multiple problems within the home, his parents with the aid of their pediatrician began to investigate the possibilities for his placement in a residential program.

When Jonathan was 6:7 he presented two right-sided febrile convulsions which resulted in a fourteen day hospitalization. An examination of his hospital record revealed:

> ". . . The patient was in good health until this afternoon when at 4:15 he had a generalized convulsion. Patient was brought to doctor's office where he had another generalized convulsion about fifteen minutes after the first one. The pediatrician described a Jacksonian convulsion involving the entire left side of his body. Patient's temperature was 100 degrees. . . .

"Well developed, well nourished, white, male child, appearing his stated age, who is unconscious for all practical purposes. Stimulation attempts were not tried.

"Head--normal cephalic

"Ears, drums, and canals normal

"Eyes--pupils pin point, slight nystagmus to the right, reacted poorly to light and accommodation.

"Nose--normal

"Mouth and throat--teeth tightly clenched, not examined.

"Neck--no rigidity

"Lungs--many coarse sounds observed--peripheral breath sounds.

"Heart--no murmurs

"Abdomen--no tenderness, no masses

"Genitalia--normal male

"Rectal--deferred

"Lymph nodes--not remarkable

"Extremities--no abnormalities

"Impression.--1) Mental retardation, possibly due to birth injury. 2) Possible juvenile schizophrenia. 3) Probable pharyngitis with febrile convulsion. 4) Right occipital meningitis."

While Jonathan was in the hospital a lumbar puncture, skull x-rays, and blood chemistry studies were done with negative findings.

Admission to Seaview

Five days after his hospital discharge, Jonathan was admitted to Seaview for residential care. (6:7)

In Seaview's pre-admission questionnaire his mother provided the following information regarding his status: his weight was forty-three pounds and his height was forty-four inches; he slept soundly, seldom having nightmares; he was fully toilet trained; he had no known food allergies but his eating habits were erratic--he would eat nothing that was soft; he required assistance in dressing, especially tying his shoe laces and doing up buttons; his favorite activities were listening to music, blowing bubbles, playing ball, taking long walks, and sometimes listening to stories.

She reported that he was usually quiet.

At the time of Jonathan's admission, the family pediatrician notified Seaview that:

> "Jonathan has had two bouts of febrile convulsions. . . . At the present time he is on Lipogantrisin, and I would continue this for ten days.
>
> "In addition, in the event of his developing a febrile illness, I would immediately put him on Phenobarbital to prevent a convulsive diathesis."

Psychiatric Consultation

One week after Jonathan's admission to Seaview, the consulting psychiatrist made the following report:

> "I first saw him outdoors in the play area where he approached us and smiled, looked interested, but in a short time wandered off.
>
> "I noticed that he spent some time in a preoccupied fashion wandering alone near the fence and looking through it. Later when I was with two other children at the slide, he joined us and with a little encouragement (he seemed slightly timid and needed his hand held) climbed the slide several times and slid down alone, but always reached for my hand as he approached the bottom. During this play he paid no attention to the other children, and would attempt to walk 'over' or past them when he found them on the ladder. He accompanied me readily to a playroom, taking my hand; attempted to open drawers in the kitchen on the way; eagerly accepted and ate a cookie.
>
> "In the playroom he immediately found a can containing marbles, took out one marble and began to twirl it between the finger tips of both hands, looking through it at the light and bringing it very close to one eye as he did so. He continued this play, unless I interrupted him, for the remainder of the time we were together. Once he looked up from the play when I took him on my lap, looked into my face, touched my hand, smiled, and then continued with the marble play.
>
> "He was only mildly resistant when I took the marble from him. At first he smiled and seemed to grasp the idea of my hiding it in my fist. He would then open my hands, but he soon lost interest in this. On one occasion, to my surprise, when he had been twirling the marble with his finger tips and I had been playing this game with him of holding it in my hand, he seemed to forget about the marble entirely when my fist was closed and abstractly began to make the same twirling motion with the finger tips of both his hands on the back of my hand as if it were the marble. Once or twice when

> I rolled the marble to him on the table top he seemed to show a spark of interest in catching it, but could not be persuaded to roll it back. Occasionally he would place the marble on the table before him and jump up and down with a characteristic hand waving gesture. He did not talk during the entire time I was with him, but did respond to my verbal suggestions and again allowed me to put the marbles away and readily left the room with me at my request. Once when I tried to get him interested in rolling a large plastic egg, he fingered it again absent mindedly for a few seconds as if to assess its twirling possibilities, but then ignored it, returning to the marble.
>
> "Impression.--He is an attractive child who looks healthy and pink cheeked at the present time, but it was my impression that he appears at least a year younger than his six years and seven months both in general body build and in his movements. He is not awkward in movements or gait, but simply appears younger. He showed the characteristic disinterest in other children, and the tendency to ignore ego boundaries which we have observed in the atypical child. He also showed marked autism, and many compulsive preoccupations which at the present time particularly involve twirling round objects.
>
> "He did not show any overt signs of depression or homesickness in his response to people today.
>
> "Diagnosis.--Typical 'atypical' child."

Residency at Seaview

Jonathan was started on a course of Compazine which was discontinued two weeks after his admission to Seaview when he presented another seizure. This again appeared to be associated with pharyngitis and resulted in an overnight hospital admission.

> "Seizure lasted one hour, characterized by left-sided tonic-clonic movements of the left face, tongue, arm, and leg. Temperature 100.6 rectally. General physical examination negative except tonsils are huge, red, and multiple abscesses at lower pole bilaterally. Put on routine Phenobarbital and Penicillin.

It was decided that as soon as arrangements could be made a complete neurological examination should be done at the seizure clinic of a large metropolitan hospital.

Two months after Jonathan's seizure, when he was 6:10, he was seen by a neurologist at the seizure clinic.

Neurological Evaluation

". . . It is of importance to note that the half dozen or so attacks which have occurred in this child can hardly be considered as simple febrile convulsions in view of several facts: they occurred at an age when these are usually not seen, while at an earlier age the child had high fevers without convulsions; at least two of these were definitely one-sided, and one was described as a Jacksonian attack, and with several of them the temperature elevation was doubtful and certainly not very marked. I am not quite clear that I understand well the episodes of 'choking' that have occurred in the past, but these may also represent some form of focal seizures. Likewise, it is hard now to pass judgment on the episodic night disturbances that are described in the history. There is nothing available in the record to indicate that any of these spells were followed by postictal sequelae such as paresis or other neurological abnormalities.

"On a neurological appraisal here, Jonathan appears alert to his surroundings, although being quite disinterested in the social sphere, with no organized speech although he has a few words which he can use with consistency to name certain objects. He did not appear afraid of me, but yet would suddenly become very resistive, sometimes quite out of proportion to the provocation. He does exhibit many of the mannerisms and behavior seen in so-called autistic children such as repetitive compulsory-like hand movements, unpredictable behavior, etc. I also noted his peculiar interest for small objects. He does not seem capable of sustained attention or performance in any activity. While in here he was able to walk, run, bend, and use his four limbs without any obvious weakness nor awkwardness. He has a tendency to bring his toes in on walking. I could not detect any abnormalities of muscle tone, bulk, or power, and no tremors either at rest or in action. There is no evidence of cerebellar abnormalities, and the fine finger movements are quite good bilaterally. He is probably ambidextrous. Examination of the cranial nerves, including a funduscopic and gross visual fields did not reveal any abnormalities. A more detailed examination of the fundi with pupilary dilatation might be worth-while; however, I could not make any sensory examination. All the deep tendon reflexes were active and equal bilaterally, with no pathological reflexes obtainable. There were no skin lesions, nor gross abnormalities of the skeleton or the cranium. . . ."

Electroencephalographic Study

". . . in spite of sedation no sleep was obtained; the waking tracing is marred by considerable artifact; the readable portions show a non-descriptive background with much low voltage, fast activity which may be attributed to medication, and some low voltage irregular slowing, but without any paroxysmal nor focal features."

> ". . . I would think that this child ought to be studied more extensively, and would recommend, therefore, admission to the neurological ward. This, however, could well wait until the latter is reopened next month, since on the neurological evaluation today I cannot detect any findings that would make me feel suspicious of expanding pathology. However, in view of the diagnosis of schizophrenia, and in order to clarify the overall picture and plan for future therapy, I believe that further observations including repeated E.E.G. as well as possibly pneumoencephalography ought to be done. My suggestion, therefore, is that you contact the parents as regard to this, and that we arrange for admission in the early part of next month. Meanwhile I would suggest institution of Dilantin 50 mg. b.i.d., reducing the Phenobarbital to 1/4 grain twice a day. . . ."

Two weeks after this evaluation, Jonathan presented another convulsion. The neurologist was contacted and he recommended that Dilantin be increased to 75 mg. and that the doseage of Phenobarbital be raised to 1/2 grain twice a day.

The recommendation that Jonathan be admitted to the neurological ward for further study was not accepted. It was felt that pneumoencephalography would have doubtful value in clarifying the diagnostic picture or the possible treatment methods, and that it might irreparably traumatize Jonathan's psyche.

Seventh Through Tenth Years

The following outline of Jonathan's behavior in the milieu of Seaview was compiled from the direct observations of the research staff and an examination of the school records covering a period of three years and eight months of his residency. (6:7 - 10:3)

Activities of Daily Living

Eating.--Jonathan took his assigned place at the table and slowly picked his way through most meals. He had learned to feed himself prior to coming to Seaview and continued to do so. He showed marked aversions to soft foods which required the use of a spoon; however, he had no difficulty with foods which could be forked and which required chewing. He was very selective and "picky," spending prolonged periods carefully masticating every morsel. He compartmentalized his plate, completely finishing one food before going on to the next item on his plate. Similarly, he would separate the crust from fried foods or the frosting from cake, eating them as isolated parts. If he did not like what was being served he became involved in stereotypic activity; however, as soon as dessert was offered his interest in eating became reawakened.

Sleeping.--Essentially, Jonathan slept soundly ten to twelve hours nightly but there were occasional disturbances when he would wet his bed or wake to toilet. In the morning, it was often found that he had spent the night cuddled with another child.

Toileting.--Jonathan had been fully toilet trained prior to his placement at Seaview. Occasional accidents took place when adults were unable to comprehend his verbal attempts or behavior indicating his need to toilet. When changes in his attendants occurred or he was shunted about from group to group, the incidence of accidents increased. When this happened his apparent distress indicated that he had integrated certain social prohibitions.

Dressing.--Prior to his admission to Seaview, Jonathan had been independent in dressing activities with the exceptions of being unable to manage small buttons and his shoe laces. As long as his clothes were laid out for him, he continued to dress himself while at Seaview; however, because he was slow and highly distractible he required constant supervision.

Motor Behavior

Jonathan presented an incongruous picture. While lethargy pervaded all of his activities he nevertheless could be described as hyperkinetic. Even when sitting or lying about he kept his hands in motion, constantly tapping and fingering objects. By wetting his fingertips in his mouth he would stereotypically spread his saliva on whatever he tapped. He would hold an object close to his eyes or against his ear and rapidly tap it with his fingertips, accompanied by sporadic squeals and facial grimaces. This spitting, tapping stereotype was often part of habitually-patterned pacing. Leaning over on his tiptoes he would stumble forward in a straight line with shuffling, mincing steps, endlessly retracing his path. Occasionally, he was observed tapping while rocking stiff-legged from side to side. This characteristic pattern of tapping was included in all dimensions of his activities and appeared to have developed during his years of residency at Seaview. He continued to manifest a special fascination for round objects, often tapping doorknobs, playground balls, marbles, and particularly the concentric circles in wood paneling.

Jonathan showed a preference for wood as a play material. Apart from his habit of gnawing on twigs and sticks, he expended sustained effort locating and gathering various sized pieces of wood which he secreted beneath a bush. He could spend entire days out of doors consumed in this activity.

He appeared somewhat awkward and poorly coordinated for his age when walking or running because of a slight inversion of his feet. Although he was slow and cautious, he was able to climb to the top of the jungle gym, and on a few occasions was found perched high on the limb of a tall tree.

Under the close supervision of an educational therapist Jonathan was able to engage minimally in the use of educational toys, puzzles, and graphic media. His best performance in fine motor skills was comparable to that of a four year old in a nursery school setting.

Linguistic Functioning

Jonathan was an essentially nonverbal, almost silent, child except when pressured to speak. Although he was capable of normal volume, the little he said was muttered in low-pitched half whispers, making it quite unintelligible. When sufficiently distressed, he was heard to spontaneously shout, "No! No! No! No! No! No!" "Mum-mee, dah-dee, go-ome," "Goo-kie" (cookie), or "Moo-goo" (a distortion of an attendant's name). He often stared at the sun or moon, moaning, "Moo-oon, moo-oon." When directed to do so, he would occasionally sing a familiar children's song. Although the tunes were identifiable, only a few words were intelligible.

Asocial Behavior

When Jonathan was absorbed in stereotypic play, he was completely unresponsive to the presence of other human beings unless they initiated some interaction. The intensity of his stereotypic play had an orgiastic quality which gave him the appearance of being completely out of touch with reality. Despite the fact that he appeared to be so out of contact, he could react immediately and come on the run when anyone called to him suggesting that cookies were about to be served.

Jonathan's indiscriminate licking of floors, walls, and furnishings often infuriated the adults in his environment. It could not be determined if he did this as part of his stereotypic pattern of oral stimulation, or as a disguised aggression against adults.

There were regular exhibitions of euphoric giddiness with complete disinhibition during which time he became flaccid and impossible to physically manipulate. This behavior fostered the attitude in adults that it was not possible for them to do anything with him when he was in his "silly" mood.

He was jokingly referred to as the "little beaver" because of his extensive chewing and gnawing on bits and pieces of wood, including furniture.

Response to Frustration

Jonathan appeared to be a fairly placid child, usually abandoning his goal if he were firmly limited; however, when he experienced prolonged harassment limiting his stereotypic play, he would manifest acting-out behavior. There were reports that he would tear his clothing or pull off the buttons. When he had toileting accidents, he was suspected of urinating or defecating in retaliation for adult imposed controls.

Some of his days were characterized by prolonged periods of distress during which he frequently would repetitiously moan, "Go-ome, mum-mee, dah-dee."

Response to Environmental Change

When Jonathan was moved from group to group, he usually required the expected period of adaptation before the subtleties of his behavior and communicative efforts were understood by his new attendant. He did not exhibit an inordinate need for order or sameness.

Response to Children

Jonathan never initiated meaningful play with other children; however, when directed by an adult, he would share a ride with another child on the seesaw. When another child in his group attacked him or took play things from him, Jonathan defended himself and his possessions by physically retaliating to reconquer his toy.

The incessant screams of a particular child in his group had an adverse effect on Jonathan's homeostasis. When the screaming lasted for hours, Jonathan showed an increase of disintegrative behavior and was less amenable to external controls.

Response to Adults

Certain adults were able to maintain strong external controls and direct Jonathan in routine activities. When he was with an adult who was not familiar with his idiosyncratic behavior or did not exert controls, he would revert to primitive behavior patterns.

Through his gross behavior he indicated that he was able to discriminate between the roles of the significant adults in his environment.

He was acceptant when affection was offered.

Health and Physical Status

During Jonathan's first year of residency two accidents occurred: the first was a superficial laceration on the cheek when he was bitten by another child; the second occurred during a music activity when he fell from the piano, suffering an inch and a half laceration on the back of his head which required suturing.

He had several episodes of tonsillitis, but without any further convulsive consequences. He also presented periodic stomach upsets accompanied by vomiting.

Dissatisfied with their son's physical status, his parents insisted that arrangements be made for a neurological reassessment when he was eight years old. Fourteen months had passed since his original neurological examination.

Neurological Reassessment

> "On a neurological reevaluation here I could not elicit any new findings. We obtained another E.E.G. with some difficulties like in the past, but this time with more information being obtained."

Electroencephalographic Report

> "In spite of the very frequent movement artifacts and the inability to obtain a sleep tracing, there is a definite sharp wave or spike discharge which lateralizes to the right parietal area. This is not very frequent and does not seem to spread. As far as I could make out, this is the first time the E.E.G. showed what presumably represents a focus and presumably correlates with some structural changes. The latter, however, is very limited and I would doubt very much that they would represent an explanation for the entire picture of this child. On the other hand, it certainly offers a better explanation for the lowered seizure threshold as demonstrated by the attacks he has had with very slight temperature elevation and I believe at least once with no fever. The role it may play in the entire picture is questionable.
>
> "We discussed with the parents again the pros and cons regarding an air study and again I told them that the air study could probably only provide some answers that would be of primarily academic interest and would not likely radically change the therapeutic approach to the problem. . . .
>
> "As far as the present medication is concerned I would not advise a reduction of the present Dilantin for which, incidentally, the boy does not show any signs of toxicity, but would suggest a reduction and finally complete withdrawal of Phenobarbital."

A year and a half passed. When Jonathan was 9:6, his parents arranged for a neurological and ophthalmological reassessment because of their concern regarding a new behavioral pattern of eye rubbing which he exhibited. During his residency at Seaview he had not worn the eye glasses which had been prescribed.

Neurological Reassessment

> ". . . There were no changes here on neurological examination. It was possible this time to obtain an electroencephalogram without sedation which in itself is obviously an improvement. The E.E.G. itself, however, continues to show a definite spike discharge which lateralizes to the right central region. In view of this I would not consider it wise to drop his present small amount of medication. I do not think that his eye rubbing, etc. are in any way related to his medication. . . ."

Ophthalmological Reassessment

> ". . . I understand that Jonathan does not stumble into things and he seems to have fairly useful vision for at least his purposes. I am told that at times he rubs his eyes violently, actually kneading them with his knuckles. While this, of course, is often a symptom of 'blindism' obviously Jonathan is not in this category since he is able to thread beads and can pick up objects off the floor, etc. I am told that he recently had an attack of hives.
>
> "On examination I found Jonathan is able to pick up objects from the floor such as a penny, a paper clip, etc. I think his near vision is certainly quite adequate. I am sure that his distance vision is not very good since a drop test refraction revealed a fairly sizeable degree of myopic astigmatism in both eyes. He has a very slight divergent strabismus, measuring about five degrees, and possibly alternating in character. There was some redness and purulent exudate in each conjunctival sac. Media and fundi were normal. I believe that he may have an allergic conjunctivitis with some secondary infection. Appropriate eye drops were prescribed. Glasses were also prescribed in the hope that they may be of some help."

A few months prior to the period of experimental therapy Jonathan's height and weight were recorded as fifty and one half inches and fifty-two pounds. (9:6)

During the course of therapy when Jonathan was 10:1, dental work was necessary. He required one extraction and three fillings which were done under Nitrous Oxide and Sodium Brevital. He had indicated his need for dental attention by exhibiting an explosive, diffuse response to cold while eating an ice cream cone.

Experimental Therapy

Jonathan was an attractive, blond, ten year old boy who was of slight stature giving him the appearance of an eight year old.

The most prominent feature of his behavior was his tapping of objects with his fingertips, wet with saliva. His lack of eye contact and internally generated grimacing gave him the appearance of being disassociated from his environment. He was essentially nonvocal, producing only laughter, giggles, tongue clicks, and whispered words.

He was assigned to the female clinician. During the seventy sessions of relationship therapy, his absorption in stereotypic behavior and overall unresponsiveness to external stimuli severely limited possibilities for communication in a reactive relationship.

Jonathan's medication remained unchanged during the six months of therapy. He continued to receive 100 mg. daily of the anti-convulsant Diphenylhydantoin, (Dilantin), and 1/2 grain of the sedative Phenobarbital.

First Month (1st through 13th session)

Jonathan did not utter a sound during the initial session.

He did not appear apprehensive or inhibited as he immediately proceeded to explore the play materials in the therapy room by rapidly fingering, tapping, squeezing, and rubbing saliva on them. He would quickly dip his index finger into his mouth and repetitiously rub and tap his saliva-laden digit on whatever toy he was exploring. When he did not hold the object in his hand, or when it was a stationary component of the room or furnishings, he would spread his saliva using the index finger of both hands simultaneously.

The variations of his tapping stereotype seen during the first session were representative of those to occur during the ensuing months. The prominent aspect of his tapping behavior was its orgiastic quality. His entire being trembled with rigidity as he crouched over an object, pressing his face within inches of it, fiercely tapping it while grimacing. If he could hold the object in his hand, he invariably would bring it to his ear and pursue the same ritual. In addition to his frenzied tapping, his fingertips were used in circular and lateral movements spreading his saliva; short, rapid, pawing strokes; and flicking movements, striking his fingernails against the object.

A peculiar patterning of movement was often seen in association with his tapping. Holding a toy in his hand, Jonathan would lurch forward on his tiptoes and stumble across the room. Tracing and retracing his steps, he would establish a path frequently moving from one corner of the room to another. The style of his gait was characteristic of that seen in Parkinsonianism.

Within ten minutes after entering the therapy room, Jonathan discovered that he had free access to the bathroom and began to play at the sink. Without hesitation he turned the faucet on and studied the flow of water as it swirled down the drain. This was followed by placing the stopper in the drain and filling the bowl, with the water faucet turned on at full pressure. Seemingly, he was delighted by the action of the water as it spewed forth, boiling and bubbling about in the bowl. When the bowl was full, he gave no indication that he planned to turn the water off and made no response to the clinician's suggestions that he do so. When the clinician had to set this limit by intervening directly in his play, Jonathan seemed completely unconcerned and complacently acceptant.

Jonathan consumed the remainder of the session languishing on the sink bowl, leaning his full body weight against the fixture. Apart from the ferocity with which he energetically tapped everything within reach, his overall behavior was predominently lethargic. At first, his activity was somewhat constrained as he tapped and patted the underside of the bowl and objects peripheral to the water itself, such as the soap dish, the walls, and the faucets; however, gradually he became more expansive, immersing his hands in the water, bringing droplets to his mouth, and lapping the water with his tongue. He would interrupt his water play momentarily and pause with his hands folded, gazing contemplatively at the water.

A dramatic interruption occured as he suddenly would jerk his head to the left three times, momentarily fixating on the illuminated wall light fixture.

Periodically during the course of this session, he thrust his finger into the socket of his eye, poking it deep into the cavity.

During the entire session, he had no eye contact with the clinician nor did he give any outward indication of attending to the clinician's reflections or imitations of his behavior.

The clinician began to terminate the session with structuring comments relative to the fact that they would have to stop, but that the toys would be available the next time Jonathan came. He delayed his departure by continuing to play, but after several repetitions by the clinician, he turned off the tap and carefully replaced the sink stopper and soap exactly as he had found them. Upon leaving the bathroom and reentering the therapy room, he began to exhibit other delaying tactics. He grabbed a small rubber squeeze toy and ferociously attacked it by squeezing and pounding it while he exhibited the contorted facial expression of a wrestler in pain. He finally accepted the clinician's request that he leave when she opened the door and made specific parting gestures.

Following the initial session, Jonathan quickly made the association between the regular appearance of the clinician who came to take him from his play group and the recognition that it was his time to go to therapy. With this cue he would independently make his way to the therapy room. If the door were not open when he arrived, he would indicate his wish to be let in by banging and kicking it, accompanied by screams and moans.

Within the first few sessions of this month Jonathan rapidly became oriented to the materials and facilities available in the therapy area. He displayed a passing interest in BoBo, the puncho, as a toy which he could tap, rub with his saliva, lie or roll on. He took particular delight in grabbing BoBo's head, doubling it over, and suddenly releasing it so that it popped upright again with a loud snap. In the process of his play with BoBo, he discovered how to release its air by opening the valve. As it was not practical to allow BoBo to become deflated, the clinician attempted to set the limit verbally and with gesture. When this failed, she repeatedly replaced the valve, only to have Jonathan remove it again. As verbal and gesture communication were ineffectual, the clinician enforced the limit by returning BoBo to the toy closet for the remainder of the session. Jonathan's lack of affect and complacency were marked as he quickly moved on to other play materials. It was not until several sessions had passed that he was able to play with BoBo without exhibiting the need to pull out the air valve.

The first distinct effort of communication that Jonathan exhibited was by seeking the clinician's assistance to unscrew the top of the nursing bottle after he had attempted to drink the water which it contained by sucking on the nipple. Not satisfied with the flow he had tried unsuccessfully to pull the nipple from the cap, and having failed in his own attempt to unscrew it, handed it to the clinician muttering a two syllable phrase unintelligibly. When the open bottle was handed back to him, he consumed its entire contents.

When the clinician provided Jonathan with two balloons he made a distinct communicative effort by thrusting them towards the clinician's mouth, indicating that he wanted to have her inflate them. Having done so she allowed them to fly about the room propelled by their escaping air. Jonathan was startled as the balloons careened wildly about the room. It could not be determined whether his distress was caused because the balloons had not been tied, or that he was actually apprehensive about their erratic flight and peculiar noise. He gathered up both balloons from the floor and vigorously pressed them into a pile of Plasticene which, in turn, he forced into the head of the rubber hand puppet (the father figure). This was the first of a series of many demonstrations of Jonathan's need to fill empty spaces. Upon completing his efforts he swept all of the hand puppets off the shelf onto the floor and, in a momentary outburst of anger, stamped on them.

A progressive interest in water play developed to the extent that by the middle of the month Jonathan was spending the entire session engrossed in activities in the bathroom. His initial interest was focused on play at the sink. He continued to be fascinated by the bubbles produced when he ran the water full force. He added globs of his own saliva and delighted in watching saliva bubbles as they floated and swirled about on the surface of the water. Also, he enjoyed transferring water from the sink to the bathtub using a glass, the nursing bottle, or the rubber hand puppet as containers.

In the absence of a stopper for the bathtub, he improvised by plugging the drain with Plasticene. He extended the use of the Plasticene to plug the overflow drain of the sink. As it was such an inordinately difficult job to remove the Plasticene and because Jonathan did not accept the repeatedly stated limits, it became necessary to exclude the Plasticene as a play material.

By the end of the month, a pattern had become established. Immediately upon arrival Jonathan would gather up an armful of play materials and run into the bathroom, dumping them into the tub and return directly to the therapy room for another armful, making as many trips as were necessary to clear the therapy room of all moveable materials. The clinician joined with Jonathan in collecting the play materials; however, at this point in the therapy process he completely ignored her when she tried to hand him a toy. His activity was occasionally interrupted by a brief pause at one of the therapy room windows where he would vigorously snap his head to one side several times, looking towards the sun. This behavior was manifest whether the sun was present or not and was identical to his behavior associated with the bathroom wall light. On close observation, it was noted that his eyes rolled wildly and discoordinately as his head jerked from side to side.

Having filled the bathtub with all the available materials, he would put the stopper in place and set the water running full force. He would then turn his attention to the sink where he would attempt to fit the neck of a balloon over the spout of the faucet. When he encountered difficulty he sought the clinician's assistance by direct manipulation of her and occasionally mumbling something which sounded like "put on." With extreme caution and deliberateness he would turn the faucet on slowly, at which time he would rush from the bathroom into the therapy room, leaving the balloon to gradually inflate with water. During the moments required for the balloon to fill and break, he would busy himself in his stereotypic pattern of tapping, using the remaining furnishings in the therapy room. He displayed anticipatory apprehensiveness as he would periodically take quick peeks into the bathroom, checking the progress of his balloon and water project. He often clung to the clinician, using her as a shield or a source of protection. With his arms about her waist he would gently pat her, as a mother would a child, in a quieting, reassuring type of gesture. The moment he heard the balloon break, he would return to the bathroom to briefly survey its spattered remnants. The entire procedure was interspersed with a kind of frenzied delight. This was particularly manifest in his gleeful squealing giggles while he clapped his cupped hands together and shifted his weight from one foot to another, as a child would in desperate need of toileting. The clinician found that he would continue endlessly filling and breaking balloons. For practical reasons he was limited to two balloons. If they were not immediately available at the outset of a session, he would ask for them in a loud voice saying, "Bayoon." Even when he spoke directly to the clinician, he maintained the most fleeting eye contact.

It became apparent that he could only shift his attention to the bathtub when he had completed the rituals surrounding the balloons. Kneeling beside the tub he would shove any floating object beneath the surface of the water, releasing it quickly and taking observable delight as it popped and splashed to the surface. Any toy which could act as a vessel would be filled and refilled with water. This included the hand puppets, the nursing bottle, plastic cups and glasses, and boats. He enjoyed turning the water on full force as he had at the sink, watching the water boil and bubble beneath the faucet. He discovered that balls would spin when placed directly beneath the faucet.

Prior to the point that the water in the tub reached a level where any movement would send waves cascading over the edges, the clinician attempted to set verbal limits, alerting him and requesting that he turn the water off. Jonathan was only momentarily acceptant as he would temporarily shut the faucet off; however, it was necessary to restate the limit as he would repeatedly turn it on again. He never fully accepted this limit during the entire course of therapy.

Similarly, his need to spread his saliva by tapping on any and everything within his reach continued unabated. The need to fill empty spaces also continued in his play as he stuffed soap, a ball, or a sponge into a glass. On one occasion when the ball became stuck in the glass, he sought the clinician's help by handing her the glass and mumbling what the clinician interpreted to be, "take out." He became quite agitated, seemingly provoked by the delay, when she was unable to immediately release the ball.

As the month progressed, Jonathan became more vigorous and expansive in his water play. At the outset of therapy he had exhibited minimal social conditioning in being somewhat cautious about getting wet, but as the activity developed to its full intensity he was found, more and more, reaching the point where he could no longer avoid getting his clothing wet. The process by which he actually entered the water began by removing his jersey which he did readily on request, apparently conditioned to this particular direction. Once his jersey had been removed, he splashed the water about with sufficient vigor to get not only the walls and floor wet, but his trousers and shoes as well; thus, his water play evolved to the point where he undressed completely and climbed into the tub. It was remarkable that while his entire body and everything about him was thoroughly wet, he continued to need to add his saliva. His responses to the clinician's directions regarding the removal of his clothing were correct, appropriate, and rapidly executed. By contrast, when it was necessary to terminate the session, he dressed with the extreme lethargy which was characteristic of his behavior outside of therapy.

Other examples of his language functioning were seen when he would respond, although delayed, to such directions as, "Pull out the plug," or, "Turn off the water." As he departed and the clinician would say goodbye, he would bring his fingers to his lips in a crude approximation of the infantile goodbye gesture of blowing kisses but without looking at the clinician. Certain confusions in his language functioning were noted when the clinician said questioningly, "You want me to open the door?" to which he replied, loudly and clearly, "No! No! No! No! No!" even though his behavior was directed towards this end. The inconsistencies in his pattern of responses, as well as his lack of responses,was thought to be the function of selective perception.

During the month he had demonstrated that he was capable of manipulating his own clothing with the exception of his shoe laces, and of toileting independently as the need arose.

Second Month (14th through 28th session)

With the exception of two occasions when the bathroom had to be closed because of plumbing repairs, Jonathan spent his entire time during therapy at water play. In the absence of any verbal content accompanying his play, the specific needs which his water play fulfilled remained obscure. His attendants reported that he was extremely apprehensive about being splashed by waves at the beach and that he exhibited a distinct aversion to getting his head wet, both at the beach and when being bathed. It was speculated that the progressive increase from his partial immersion to total immersion could represent a developmental process in which he overcame his apprehensions. The total configuration of his water play, especially the inflating of balloons with water, was viewed as the continuing reenactment of an identical pleasurable activity which he frequently had engaged in when he was three years old.

Jonathan's growing acceptance of interaction with the clinician in a face to face relationship was demonstrated by his willingness to take materials which she offered to be included in his water play. This was markedly different from the earlier sessions where there had been total social detachment. It was found that unless the clinician intervened in his play, he would repetitiously pursue his stereotypic patterns without modification. Whereas imitation had proven successful in furthering interaction with other children in the study, Jonathan completely ignored the clinician's imitations of his behavior. He did, however, readily incorporate the clinician's variations and modifications of water games as part of his play pattern. He was particularly delighted when the clinician would pour water from a height into the tub. Squealing and giggling, he would move under the cascade of water allowing it to splash on parts of his body, trying to catch it in his hands or on the end of his fully-extended tongue.

It became clearly established that his selection and handling of materials in the water was indiscriminate, as everything in the therapy room was thrown into the tub in a random order. It was necessary to impose the limit that he could not include his clothing, scouring powder, or bottles of detergent, all of which he had attempted to throw into the tub at one time or another. He demonstrated some learning and geographic orientation as he came to know where everything was kept that he might include in his water play. When balloons were not set out on the table for him, he learned to search the clinician's pockets.

As BoBo was the largest object available he tended to have the greatest variety of interaction with this toy. It came to be an integral part of his water play as he would drag it into the bathroom and with great difficulty haul it over the side of the tub. BoBo was pushed, poked, punched, patted, dropped, drowned, splashed, and spit on. If it were not immediately available at the outset of the session, he would ask for it, saying in a loud voice, "BoBo."

While the total number of his verbalizations were extremely limited, it was noted that the few words he spoke were uttered in a low-pitched monotone. The vocal characteristics of his propositional productions were in marked contrast to his laughter and giggles which included a wide range of pitch variations. In responsive speech while "No! No! No!" was heard, Jonathan never answered "Yes," but would indicate an affirmative response by echolalically reproducing the last word or phrase of the interrogative. When the clinician would ask, "Do you want me to do it again?" he would reply, "Do it again," or simply, "Again." Another example of his echolalic and disgrammatic reproductions were seen when the clinician would ask, "Do you want me to put it on?" referring to the fitting of the neck of the balloon over the spout of the water faucet. He would reply, "Put on." When he was asked if he wanted to take off his jersey, he indicated that he had become conditioned to certain language cues by raising his arms over his head.

Jonathan's play provided only a limited basis for the clinician's reflections or interpretations of his feelings because of the absence of themes and the perseverativeness of the essential quality of his play, resembling a constant recapitulation of what had gone on before. Accordingly, the clinician's verbalizations were restricted to descriptions of his behavior, the regular need to set limits, and occasional inquiries in her attempts to clarify his vaguely expressed needs. He showed little capacity to utilize the clinician's commentary except when the content was highly specific concrete material. It seemed that the recognition of his feelings was sufficiently abstract to be beyond his level of comprehension. While certain aspects of his responses to language stimuli appeared to be the function of selective perception, it seemed that the inconsistencies in his responsiveness could be more readily accounted for on the basis of an auditory perceptual dysfunction.

It was found that Jonathan would respond appropriately when called from the play yard without actually seeing the clinician.

It had been established that he had adequate geographic orientation to find his way independently to the therapy room; however, when he encountered obstacles en route such as a locked door he was unable to select an alternate course, either by using another entrance way or seeking the assistance of a nearby adult. When confronted by such problem solving situations, he demonstrated the lack of an abstract attitude in his failure to recognize alternative solutions. He would be found at the door pursuing his spitting, tapping stereotype. The moment the door was open or the obstacle removed, he demonstrated memory function by continuing on his way to his destination.

Some growth was seen in the therapy process as Jonathan was presented with the problem of overcoming an obstacle to attain his goal in the therapy room itself. On one occasion, the bathroom door was closed and bolted when he arrived for therapy. His independent attempts to open the door were varied, but unsustained, and accordingly ineffectual. He briefly kicked the door, jiggled the bolt, shook, pulled, and turned the doorknob, but without sufficient energy to release the door. After this momentary effort, he abandoned his goal of entering the bathroom only to return and repeat the same inadequate performance. At this point he spontaneously sought the clinician's help by pulling her to the door and placing her hand on the knob. He responded to her inquiry, "You want me to open the door?" by echolalically replying in a loud but misarticulated voice, "Oh-en d-oh." (Open door)

Towards the end of the second month, Jonathan's apprehension about staying in the bathroom while the balloon was being inflated with water gradually diminished. While he continued to display apprehensive behavior, he was able to remain in the bathroom seeking reassurance by clinging to the clinician. It continued to be necessary for him to pursue the ritual of filling and breaking the balloons before he could begin playing at or in the bathtub.

Other ritualistic behavior became manifest in association with his need to seek stimulation from intense light sources. while these activities were brief; nevertheless, they occurred with sufficient frequency to be included as part of his stereotypic patterns. It had been noted in his earlier history that he had exhibited a continued interest in rotating marbles which he held but a fraction of an inch from his eyes. While it was known that this behavior continued at Seaview whenever he had access to marbles, it was observed in therapy that any material which could refract or magnify a light source was used in a similar manner. He would take any translucent toy and slowly rotate it holding it in front of any available light source. He experimented with most materials in this fashion, as though he were constantly assessing their properties relative to their potential to intensify light. He displayed an extraordinary tolerance for bright light as he would hold a piece of silverware and adjust it so that the refracted light shone intensely into his eyes. This behavior, along with the probable photic stimulation caused by pressing his fingers into the sockets of his eyes, continued spasmodically throughout the course of therapy.

On the two occasions when Jonathan could not play in the bathroom because of repair work, he was unable to accept the clinician's explanations regarding the repairs in progress. The complexity of the situation seemed to be beyond his comprehension. He reacted to this limit with a display of indirect aggression. As he was so placid in his broader environment at Seaview, the clinician felt it was fortuitous that he was able to express his aggression and angry feelings which provided her with the opportunity of expressing her acceptance. His anger was relatively short-lived but was clearly manifest as he threw toys to the floor, broke and chewed crayons, and scribbled on the walls. He then became absorbed in forcefully stuffing the nursing bottle with Plasticene. This was accompanied by facial grimacing. Without sufficient clay to fill the entire bottle, he spent several minutes attempting to fill the remaining space with his saliva. Finally abandoning this task, he played gingerly with the inflated balloon handling it delicately as if it were extremely fragile and might disintegrate under his touch. He displayed a passing interest in blowing bubbles which he did independently. His interest in each of these activities was transitory as he quickly reverted to his stereotypic pattern of grimacing, while tapping objects and clapping his cupped hands together.

Third Month (29th through 39th session)

The majority of the sessions during this month continued to be focused upon water play. Jonathan included the bathtub, sink, toilet bowl, and toilet tank in his overwhelming need to use the tips of his fingers to tap and daub his saliva. It was conjectured that apart from the autoerotic, tactile-kinesthetic pleasure arising from rubbing his saliva on objects indiscriminately, he appeared to derive additional satisfaction from the glistening, wet, porcelain surfaces which were a never-ending source of intensified visual stimulation. It had become apparent that his water play had assumed a highly ritualistic, stereotypic pattern without significant modifications or variations. His total absorption in this activity which was devoid of thematic content provided few opportunities for any face to face interaction, thereby lessening the possibility of furthering the development of a productive interpersonal relationship.

By the thirtieth session it was the opinion of the research staff that the clinician should attempt to gradually wean Jonathan from water play by presenting other uses of the play media at the beginning of sessions. It had been found that unless the clinician actively intervened, Jonathan was incapable of independently shifting from one activity to another. He perseverated to the extent that it seemed no longer tenable to assume that he was capable of solving his own problems in his own time. The extent of his idiosyncratic and perseverative behavior correlated with the newly-gathered medical reports, clearly indicating that he was a brain-injured child. On the basis of the existing relationship in which the clinician was acutely aware of Jonathan's tolerance for frustration, it was felt that ways might be found to further his emotional and intellectual development if he could be provided with more structure.

Jonathan's immediate response to being restricted from free access to the bathroom was a mild expression of anger. This quickly took the form of a total response of giddiness. He would assume awkward postures lying limply on the floor, or throw himself on BoBo, sprawling and rolling about, all of which was accompanied by waves of giggles and laughter. Such defensive maneuvers provided an acceptable disguise for his essential resistance to the shift in focus of the therapy setting. Members of the staff at Seaview had often remarked that Jonathan was difficult to manage because of his "silliness." It was clear that he was able to resist their manipulations by such behavior; thereby maintaining distance and control of most situations. The use of this mechanism rarely provoked any retaliatory action from his attendants as might have occurred if he had manifest rage. The clinician found that his giddiness could be dissipated by her acceptance and direct participation, gradually moving him towards a structured activity.

The clinician's initiation of directed play began with simple constructions using clay or blocks, to which Jonathan attended for short periods of time. While he never became actively involved in Plasticene modeling, he gradually came to participate in block tower constructions if the clinician handed him appropriate blocks. When the block constructions were fairly complex, he manifest his often demonstrated need to fill empty spaces as he would become readily absorbed in producing solid rather than skeletal structures. In these attempts, he concretely demonstrated confusions in spatial relationships by perseveratively trying to fit inappropriately sized blocks into the existing spaces. He ultimately achieved ten to twelve block high constructions which he delighted in knocking down, scattering the blocks about the room. Such behavior was his way of indicating his desire to terminate the structured activity at which time he often would say, "bayoon." The utterance of the single word represented the entire configuration of his total experience at water play. Accordingly, the clinician was immediately responsive to his expressive effort so as to provide him with positive reinforcement.

As increasing amounts of time were spent outside the bathroom, further and more varied observations of his behavior in response to new stimuli were possible. In several sessions the clinician introduced finger paints. His behavior reflected his previous experience with this particular material. He placidly accepted the clinician's offer of a smock and patiently allowed her to fasten it, before he plunged freely into smearing and spreading the paint on the paper. His total productive effort lasted but moments and was limited to linear sweeping movements with the tendency to work from the periphery toward the center of the paper. While seemingly absorbed in any activity, sudden unpredictable shifts in mood would occur in which Jonathan would become fragmented, disorganized, and hyperkinetic. This was poignantly manifest in one episode with the finger paints when he suddenly abandoned the structure and within moments was able to wildly spread finger paint on the walls, furniture, and himself. His exhibition of angry feelings was viewed by the clinician as his attempt to establish the boundaries of their relationship through a trial and error approach, as well as an expression of his need to ventilate his angry feelings as his daily environment at Seaview was constrained and any exhibition of aggression was vigorously suppressed. Whenever these explosive episodes occurred, the clinician maintained a basic acceptance indicating her recognition of his need for these outbursts, and restructured the situation establishing the limits for each episode as the need arose.

During this month Jonathan began to wear eye glasses which had been newly purchased. As they were worn for such a brief period, their relative value could not be ascertained; however, the clinician had the impression that there was a diminution in the poking of his fingers into his eye sockets and a lessening of his need to hold objects close to his face while tapping them.

Jonathan gave several spontaneous demonstrations of a memory for melody when he would sing familiar children's songs in which he carried the tune but completely distorted the words by mumbling and misarticulating them beyond the point of intelligibility. On several occasions while he cranked the musical jack-in-the-box, he was heard approximating the melody and the words.

While Jonathan was rarely seen mouthing or sucking objects, he persisted in his need to fill empty spaces by attempting to fit various sized balls into his mouth. He succeeded in incorporating a rubber ball with a two inch diameter, and on other occasions, two ping pong balls simultaneously. From time to time he was observed gnawing or chewing wooden toys but not to the degree that it occurred outside of therapy.

The most significant modification in the relationship occurring during this month was Jonathan's initiation of close physical contact with the clinician. He would crawl into her lap, spending the major part of several sessions cuddling; but even in this, tapping was present.

Fourth and Fifth Months (40th through 62nd session)

Over the next two months of therapy Jonathan came to accept increasing amounts of structure and acquired a greater tolerance for the delay of gratification. The last part of most sessions continued to be spent in his usual water play. Gradually, his willingness to participate in structured activities increased. The motivation for his participation in these activities did not seem to be generated by the activities in of themselves, but rather were pursued with increasing attention and interest largely because of the copious amounts of praise and affection provided by the clinician.

At this juncture, Jonathan seemed to have worked through his apprehensions regarding water in so far as he was now without inhibitions or restraint, frequently plunging his head beneath the surface. It was remarkable that during the entire course of therapy, considering the vigor and energy of his water play, he had hurt himself only once by slipping in the tub. On this occasion he displayed an overwhelming catastrophic response, disproportionate to the slight bump which he received. He began to moan loudly, clinging to the clinician for comfort and protection, seemingly more startled than hurt; however, he continued to moan for a full five minutes. Of significance during this episode was the artificial quality of his moan, even though his general behavior indicated that he was truly distressed. His moan was restricted to two alternately produced distinct tones approximately an octave apart. His responsiveness and readiness for human interaction was manifest as he positioned his head in order to receive the "curative" kiss that the clinician offered.

On another occasion, Jonathan manifest markedly different behavior to minimal injury, going to great lengths to hide a scratch on his finger. It was only because of the extent of his efforts to conceal the minute scratch that the clinician became aware of its existence. As he was so reticent to display his hurt, it was assumed that he associated this type of injury with previous unpleasant experiences. When he finally felt comfortable enough to show the clinician his finger it was accompanied by a distinctly articulated and full-voiced cry, "Ban-daid!"

During this period, while engaging in structured activity, multiple opportunities were provided to observe Jonathan's perceptual functioning. He exhibited a capacity for visual discrimination of color in matching four primary colored balloons with crayons. When presented with any activity of this type, he seemed to presume that part of the expected behavior was to name the object or material being used. He spontaneously would take the clinician's hand, guiding her finger to each item as he named them. In this manner, he demonstrated that he had learned the names of the colors; however, while he appropriately named red and yellow, he would frequently interchange the names of blue and green. When the clinician drew a picture of a face, he would take her finger and begin to point to and name the gross parts. He extended this to the body itself, directing the clinician's finger to his body parts as he named them. This included such words as "leg" and "stomach." The quality of his articulation in naming was so distorted that if he had not been actually pointing to the part, his near-whispered vocalizations could not have been interpreted. The total experience of these activities seemed to be the recreation of some original learning, probably conducted by his parents.

Occasionally, Jonathan saw both clinicians together in the therapy area as well as in the milieu of the institution. During several of these contacts, he looked at them and said, "Mum-mee, dah-dee." This association was never made when he saw the clinicians separately. It was posited that he had generalized some features of his therapy with positive experiences occurring with his parents prior to his institutionalization.

A variety of activities with geometric forms provided specific insight relative to his level of functioning with spatial relationships. He was successful in his efforts to make gross discriminations sorting circles, stars, triangles, and rectangles; however, difficulty was evinced in the finer discriminations required in sorting diamonds from squares, and cylindrical wooden blocks from rectangular blocks of equal length.

In the more concrete situation of matching common objects with their pictures, i.e., shoe, comb, watch, plate, knife, fork, spoon, glass, and cup, Jonathan enjoyed the satisfaction of a completely accurate performance.

In an attempt to assess his auditory recognition for the names of the geometric forms and common objects, the clinician requested that he give her an object. He was unable to respond until the extended open hand gesture of "give" was included with the verbalization. His attention and willingness to participate was manifest by his sustained effort even though he was unable to respond correctly. When the auditory stimuli was concretized for him by calling the circle a "ball" or a "moon," he was rapid in making a correct response.

By presenting Jonathan with five blocks of equal size and shape, it was demonstrated that he was unable to appropriately respond to requests for one, two, or three blocks. He exhibited a lack of number concept by his substitute responses, repeatedly giving the clinician the wrong number of blocks.

Several attempts to encourage Jonathan to copy simple linear abstract designs with paper and crayons were unsuccessful. It was felt that his negative valence for crayons prevented his participation; therefore, the Goldstein Scheerer[1] sticks provided a clear example of his need to concretize. He was unable to reproduce the most rudimentary stick designs. When presented with a four stick design, he spontaneously arranged his sticks in the form of a square. He perseveratively reproduced his square when new variations were introduced; thereby indicating his willingness to participate by doing only that which he could do.

Certain responses to the function of mirrors were noted when Jonathan and the clinician stood before the mirror engaged in pointing to, and naming, his body parts. He encountered no difficulty in following the clinician's lead by copying her movements reflected in the mirror. When a light was introduced behind the one-way vision mirror to assess his capacity to attend to and follow a moving light, Jonathan's absorption in trying to locate the light source within the therapy room clearly demonstrated that he had conceptualized the function of mirrors.

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[1] Kurt Goldstein and M. Scheerer, "Abstract and Concrete Behavior," American Psychological Association Monographs, LI, 9.

Because the majority of Jonathan's echolalic reproductions were whispered and because he had demonstrated extensive confusions in auditory comprehension, it was felt that amplified sound stimuli would separate the auditory figure from the background and that it might effect a change in the volume of his vocal output. Earphones which were connected to the audio circuit of the tape recorder were provided experimentally. His response was amazing. His attention and interest was sustained with a marked diminution of his tapping stereotype. It was planned that the earphones would be introduced for short periods of time; however, Jonathan's fascination with amplification was so marked that when the clinician attempted to remove the head set, he vehemently would protest, shouting repetitiously, "No! No! No! No! Pu-awn" (put on). In order to provide him with some degree of autonomy, he was shown the volume control knob and through gesture instructed as to its function. With a minimum of guidance, he adapted to the situation, selecting the volume level of his preference. The amount of attenuation which he tended to select was approximately sixty decibels.

This activity culminated in an extraordinary session in which Jonathan sat for a full twenty minutes wearing the head set, completely engrossed in sound production. He rapidly named forty to fifty picture cards of common objects. It was difficult to assess the correctness of his responses as his verbalizations were severely misarticulated and, for the most part, continued to be produced in muffled, half-whispers. It was estimated that he gave correct approximations for fifty percent of the pictures. His errors were attributed, in part, to those pictures which would be unfamiliar to an institutionalized child. The length of his attention span, his readiness to respond, and his direct eye contact were in complete contrast to his usual behavior pattern. Following this activity, he was engaged in direct imitation of individual phonemes, echolalically reproducing the sounds with obvious delight. When presented in isolation, he reproduced the sounds of g, t, l, and sh. Although he tried, he was unable to approximate ch, f, and th. Maintaining the atmosphere of a game, the activity continued by presenting series of words in groups, beginning with the same phoneme. His responses were limited to those words which he had previously demonstrated knowledge of.

Expanding on his interest in amplified sound, other sessions were spent in producing gross noise with a variety of toys. Such activities held his interest for entire sessions. During these sessions, inconsistent variations in the volume of his vocal productions ranged from his usual whisper to full-voiced, clearly audible sound. He tended to use normal volume more frequently over the remaining weeks of therapy.

The general level of interaction between Jonathan and the clinician tended to increase during this period, marked by greater physical contact as the clinician engaged him in gross bodily activities. A favorite game evolved in which he would lie on his back on the floor and raise his legs in order that the clinician might position BoBo on the soles of his feet. He developed some skill in balancing BoBo and each time it fell, he would squeal with delight and call out, "Again! Again!"

His overall increase in responsiveness was cogently demonstrated as he showed an eagerness to comply with the clinician's requests despite his difficulty in comprehending the precise meaning of the words. One such situation occurred when he was asked to turn on the light in the bathroom. Unlike his earlier behavior he looked towards the clinician questioningly, and then looked about the room, giving every indication that he knew something was expected of him; however, he was unable to respond. When the clinician restated the request accompanied with gesture, his correct response was immediate.

As he continued to exhibit his interest in staring at the sun shining in the therapy room window, the clinician sought to find out the special meaning that this behavior might hold for Jonathan by asking him directly, "What do you see?" to which he would respond, "Moon, moon." Unfortunately, this only confounded the confusion as to the possible dynamics.

Sixth Month (63rd through 70th session)

Jonathan continued to respond positively to the presentation of structured activities. During the final month of therapy he spent only one session in the bathroom at water play. Whereas he had previously rejected crayons by breaking and throwing them, he was quite willing to join in tracing the outline of the simple geometric forms of the building blocks. In this activity, he exhibited poor fine motor control, suggesting that part of his resistance to crayoning was based on poorly developed fine motor skills. His performance would compare to that of a four year old.

Similar ineptitude was demonstrated in his use of the Playskool shoe lace trainer. He was able to complete the task only after repeated demonstrations as to the placement of the lace, and through the clinician's guidance as she blocked the inappropriate holes. In order to make the activity more meaningful, he was given an opportunity to practise by using both his own and the clinician's shoes. Verbal directions were ineffectual throughout; however, he was responsive to gesture as he was quite willing and able to put the clinician's shoe back on her foot. In the performance of this simple act, he demonstrated that he was far less asocial than his earlier behavior suggested.

In contrast to his overall increase in responsiveness and socialization, a new pattern of aberrant behavior became intensively manifest during this final month of therapy. In the midst of any activity, Jonathan would suddenly get down on the floor on all fours and, with one sweeping movement of his full-extended tongue, would quickly lick the floor. With equal rapidity, he would return to the activity he had been engaged in.

While the relationship was not clear-cut, it was noted that his glasses had been broken, and during the period that he was without them he returned to the habit of rubbing his eyes by pressing his forefingers into his eye sockets. There was a marked increase in the extent to which he exhibited this behavior in comparison to the earlier months of therapy. The depth to which he thrust his finger into the socket gave the appearance that he was hooking his finger directly behind the eyeball. The clinician's efforts to limit this behavior were ineffectual. It was also noted that while he did this to both eyes, there was a marked tendency to poke and rub the left eye with greater frequency than the right.

Other behavior exhibited during this month also called attention to the left side of his body. On several occasions, he manifest a gait disturbance in which he tended to drag his left foot.

During the last few sessions of therapy, an effort was made to explore possible ways of developing techniques for evaluating various dimensions of his language comprehension and perceptual functioning. As these procedures were highly directive, the non-participant clinician acted as the tester, with the regular clinician present.

Jonathan was given the earphones which had proven so effective in helping him to maintain his attention. Seated at the table, the following materials were set before him: a crayon, a stick, a plastic nursing bottle, a plastic boat, and a small rubber figurine of a man. All of the directions were given slowly, deliberately, and without gesture.

Tester: Give me the crayon.

Jonathan: (Responds correctly and immediately.)

T. : Give me the bottle.

J. : (Responds directly and correctly.)

T. : Give C. (the clinician) the boat.

J. : (Selects the boat, pauses, and gives it to the tester.)

T. : Give C. the man.

J. : (Selects the man, but gives it to tester. He then picks up the remaining item, the stick.)

T. : What is that?

J. : What's that. (echolalically)

The same items were replaced on the table and their relative positions rearranged.

T. : Put the man on the stick.

J. : (Responds by putting the stick on the man.)

T. : Put the bottle on the stick.

J. : (Responds correctly.)

T. : Put the bottle in the boat.

J. : (Responds correctly.)

A definite shift was made by rearranging the five items on the table.

T. : Give me the man, the stick, and the bottle.

J. : (Selects the man and the bottle, but appears to have forgotten the remainder of the direction. Momentarily abandoning the task, he begins tapping the items.)

T. : Put the stick on the floor.

J. : (Responds correctly.)

T. : Give the crayon to C.

J. : (Responds correctly.)

T. : Give C. the boat.

J. : (Responds correctly.)

Then the tester introduced four plastic cups: red, yellow, blue, and white.

T. : Give C. the red cup.

J. : (No response is observable.)

At this point Jonathan became restless. His lack of response suggested that he had lost interest in the activity. As it was well established that he, like the other children in the study, was especially fond of sweets, candy was used to motivate him in tasks involving color discrimination and language comprehension.

Jonathan was given a piece of candy. The four plastic cups were placed, inverted, on the table. He was shown that a candy had been placed under the yellow cup. The tester then mixed the cups by randomly moving them about on the table. Jonathan had no difficulty following the movements of the cups as he immediately selected the yellow cup and secured the candy the moment the mixing stopped.

Jonathan was prevented from seeing the candy being placed under the white cup. Although the verbal direction was repeated four times, with and without amplification, he did not respond. Repeating the less complex form of presentation which did not rely on language comprehension, Jonathan was shown that the candy was under the white cup. After the cups were randomly mixed, he immediately selected the appropriate color.

Returning to the verbal presentation in which he was prevented from seeing the candy being placed, this time under the red cup, he responded appropriately after the verbal directions were given three times.

In order to maintain his interest, the presentation was varied by introducing four new items: a box, a plastic glass, a can, and a paper bag. Jonathan was prevented from seeing the candy being placed in the bag. After the direction, "The candy is in the bag," was repeated he made a substitute response by looking under the box. Using the same items and general procedure, Jonathan was told that the candy was under the glass. He made another substitute response by searching under the table. In the next presentation, the candy was placed under the box. Jonathan responded immediately and correctly to the verbal direction. In a second trial with the glass, he did not succeed in following the verbal direction and abandoned the task.

The earphones were removed and the presentation varied by hiding a candy in the pocket of his coat which was hanging on the doorknob. Depending solely on verbal directions, he went to his coat and shook it in an attempt to find the candy. As he did not look in the pocket it was thought that he either did not hear, or understand the word "pocket." When the directions were repeated emphasizing that it was in the pocket of his coat, he made a klang association by looking for the candy in the closet. In his confusion, he began to echolalically mumble approximations of the directions as if the reauditorization was necessary in order to maintain his focus. As Jonathan's behavior indicated signs of mounting frustration he was shown that the candy had been placed in his coat pocket.

In the following presentation, the candy was placed in a toy truck which was the only item on the table. When the directions were given, he perseveratively returned to his coat to search the pockets. The candy was then secreted in one of his gloves. In the manner used for nursery school children, Jonathan's gloves were fastened to his coat sleeves. He responded to this verbal direction immediately and appropriately. On this note of success, the session was terminated.

Within the structured testing situation, Jonathan's irregular performance parallelled his level of response to verbal stimuli as seen in the less structured therapy sessions. His ability to rapidly and correctly discriminate color was consistent with his therapy performance. Unlike his success with visual discrimination tasks, his responses to the auditory presentations involving color were severely delayed or absent. Jonathan achieved his best level of performance with those items which were concrete because of their familiarity. He tended to select and respond to the one familiar word from an entire sentence in his efforts to complete the task. His reauditorization of directions through echolalia and his substitute and perseverative responses demonstrated both motivation and evidence of a receptive language disturbance.

During the last month of therapy a general increase in his vocal output occurred both in response to the direct stimulation by the clinician and his spontaneous vocal play. As he engaged in various activities he was heard humming or chanting melody patterns, seemingly enjoying this autotelic activity.

Therapy was terminated by gradually decreasing the frequency of the sessions.

Case Summary

Medical History

According to the hospital records, Jonathan's birth was normal. Within two months, his pediatrician noted that his motility was limited and suspected the presence of a visual defect.

Total retardation in motor development was manifest as Jonathan was thirteen months old before he was able to sit without support and did not walk independently until he was over two years old. His infancy was reportedly free from major illnesses with the exception of a severe attack of measles when he was eighteen months old.

His lack of speech and poor motor development sent his parents in search of help from many specialists. Jonathan was examined by four or five pediatricians, an ophthalmologist, an otolaryngologist, several psychiatrists, psychologists, and speech and hearing clinicians. Marked autistic behavioral patterns were usually noted, with childhood schizophrenia the prevailing diagnosis. A visual defect was identified as myopia for which glasses were prescribed. The existence of a peripheral hearing loss was ruled out by free field audiometric speech tests. Mental retardation was often considered as a possible diagnosis, but was rejected on the basis of clinical observations of his behavior suggesting probably dull normal to average intelligence.

Two unsatisfactory attempts at electroencephalographic studies failed to identify the neurological basis for several episodes of convulsions; accordingly they were thought to be simple febrile convulsions. Immediately prior to his institutionalization at Seaview, he was hospitalized when he presented two convulsions, one described as a Jacksonian attack involving the left side of his body. After two further convulsive episodes at Seaview and with additional electroencephalographic studies, it was established that Jonathan had a focal lesion in the right parietal lobe.

In spite of the positive neurological findings, he continued to be treated as a psychotic child. He received anti-convulsant drug therapy to control his seizures.

Previous Therapy and Educational Experience

Jonathan spent two years in a normal nursery school setting, but was unable to take advantage of their program. He remained isolated from the group and a behavioral problem. Concurrent with his attendance at the nursery school, psychotherapy was provided both Jonathan and his mother for a period of eight months at a child guidance agency. He "retained much of his compulsive, stereotyped behavior," but made gains "toward more spontaneity, expansiveness, and a more genuine awareness of people." He also spent six months in a private tutorial school just prior to his placement at Seaview. No change in his status was effected by this educational effort.

Residency at Seaview

When Jonathan was six and a half years old he was admitted to Seaview. Three years and eight months of his residency were studied and revealed that he maintained previously acquired skills in the activities of daily living. His stereotypic patterns and hyperkinesis continued unabated. To his pattern of ritualistic play with round objects he added the new stereotypes of finger tapping and poking his fingers into his eye sockets.

Jonathan lethargically participated in the activities provided at Seaview as long as strong external controls were imposed. Under the vigilant supervision of an authoritarian attendant, transitory suppression of his stereotypic behavior occurred. He experienced periodic outbursts of "home sickness" and aggression. There were no modifications of his speech behavior.

Within the first three months of his residency he presented two seizures. Anti-convulsant drug therapies were successfully instituted to control the seizures. Several episodes of tonsillitis, periodic digestive disturbances, and accidental lacerations of the head and face occurred during his residency.

Experimental Therapy

Observations and impressions gained during the seventy sessions of experimental therapy were as follows:

Nature of the Relationship

As Jonathan's medical history clearly indicated that he was a brain-injured child, it was not surprising that his capacity for interpersonal relationships was impaired. He manifest a characteristic shallowness of response to human interaction found in those who lack the abstract attitude. Impoverishment in receptive and expressive language impaired the development of a relationship. Jonathan seemed to be resigned to his status, never reaching out for help except to satisfy introcentric needs. Even this was rare. In a permissive atmosphere, he was free to drift into endless hours of stereotypic activity of tapping and water play. He lacked the capacity to make use of a non-directive structure. He was, by contrast, remarkably responsive to structure. Progress was made in the formation of a relationship through the clinician's active intervention into his withdrawal and absorption in stereotypic activity.

Perceptual Processes

Jonathan's responses to external stimuli which were observed in both structured and unstructured situations were outlined as follows:

Olfactory.--Jonathan did not manifest aberrant use of this modality.

Gustatory.--He showed distinct preferences in his eating habits. This, combined with marked aversions for the textures of certain foods, suggested that no dysfunction of discrimination was operant. His extensive pattern of indiscriminately spreading his saliva and occasional mouthing or licking of nonfood materials was thought to reflect his lack of socialization.

Tactile-kinesthetic.--The incessant tapping and fingering of objects seemed to function exclusively as an autotelic activity. It did not seem to be related to any particular perceptual need other than providing him with an abundance of tactile-kinesthetic stimulation with only the minimal expenditure of energy.

Response to Pain.--There was no suggestion that Jonathan lacked proprioceptive feedback. He responded directly and specifically to any bodily discomfort, although somewhat out of proportion to the intensity of the stimulus.

Visual.--It was established that both of his eyes were impaired by a severe myopic astigmatism as well as an alternating strabismus, for which glasses were prescribed. As he wore his glasses for such a short period of time, it was not possible to assess their relative value. His vision for near was reportedly better than for distance; however, he behaved in a contradictory manner by either holding things very close to his eyes or pressing his face within inches of whatever he was viewing.

A need for stimulation from intense light sources was exhibited repeatedly. He manifest a startling degree of tolerance for reflected light. His need to wet surfaces with his saliva and his persistent habit of pushing his fingers into his eye sockets seemed to be related to his overall efforts to seek photic stimulation.

Adequate discrimination for color was demonstrated. He was able to sort simple geometric forms and match pictures with common objects.

Auditory.--Jonathan's auditory acuity was not suspect as he responded to stimuli of minimal intensity. When a record player was operated at the wrong turntable speed, he became distressed. This, combined with his ability to reproduce simple melody patterns suggested that he had the capacity to make certain pitch discriminations.

Motor Behavior

Jonathan rarely ran but rather ambled about, seemingly without purpose or direction. His gait was slightly impaired by a tendency to invert his feet. While he could ascend and descend stairs with alternating feet, he frequently descended in an infantile manner of one step at a time. Incongruously, he occasionally climbed tall trees. An overall lack of body turgor often gave him the appearance of being poorly coordinated. Many of his deficiencies in motor activities could be attributed to gross deficits in socialization and the inability to utilize verbal explanations or directions.

Vestibular Functioning.--There was no evidence of any dysfunction in this area.

Linguistic Functioning

Receptive.--Even when strongly motivated to respond to verbal directions Jonathan consistently failed, either not responding at all, responding erroneously, or giving substitute responses. While he had become conditioned to many concrete words and phrases, he was readily confused as the level of language increased in abstraction. He was able to respond to many language stimuli as long as what was being said was immediately related to what he was doing and was free from complex, lengthy, or abstract constructions. When gesture accompanied verbal directions, he responded more readily and appropriately. Both the contradictory phenomena of perseveration (over-attending) and distractibility were essential parts of his behavior which interfered with his integration of words spoken to him.

He had not developed any of the more abstract symbolic processes required to use number concepts and written or printed materials. His basic language deficit was compounded by his abandonment of listening and the absence of curiosity about his external reality.

Expressive.--An examination of his peripheral oral mechanism revealed no structural abnormalities.

Apart from paroxysms of laughter and giggles, Jonathan rarely used any speech. What little he did say was more often than not spoken in half-whispers and crudely articulated. He readily evoked the word "no" but never "yes." With the progress of therapy, he manifest a moderate increase in spontaneity, occasionally humming tunes or responding echolalically to the clinician's statements. It was established that he was able to evoke the names of many common objects [illegible] long as they were presented in a highly concrete manner. Even if he knew a word or phrase which could be useful in helping him to achieve a goal or satisfy a need, he tended to rely on gross manipulation of adults. It seemed that he also expected that his needs would be anticipated and fulfilled by the adults in his environment; accordingly, there was little actual need for expressive effort, especially when his routine was the same from day to day. When his pattern of living was disrupted, he would mildly protest by whining or crying, and even this not too strenuously.

Time and Spatial Orientation

Jonathan seemed to have resigned himself to the endless days of confinement of the institutional routine in which there was only the present, with neither past nor future.

He demonstrated geographical orientation through his recognition of the permanence of objects, independently finding his own way to or from any part of the buildings or grounds.

He failed to make the finer distinctions between the permanent properties of objects and their transitory spatial relationships. This dysfunction was repeatedly manifest in his play as he tried to combine or sort materials of dissimilar size and shape.

While inadequate, he had minimal ideational and symbolic representations of absent objects and people.

Reaction Time

A generalized depressed reaction time was prevalent in all areas of performance. Much of the time, Jonathan did not react at all to external stimuli. He over-attended to whatever he was doing so that external stimuli rarely impinged upon his consciousness. Once his attention was gained and he was motivated, he would respond quickly, but not necessarily appropriately.

Learning

Attention.--In unstructured situations, over-attention or perseveration to his introcentric needs prevented him from being affected by extraneous stimuli. If a shift could be facilitated and structure provided, Jonathan exhibited an increase in attention span. Under the unusual conditions when he wore earphones and received amplified auditory stimuli, he was able to attend for full sessions. It was not clear whether the increase in attention was the product of the novelty of the situation or the facilitation of the separation of the auditory figure from the background.

Imitation.--Crude echolalic and disgrammatic reproductions of speech were his only direct imitations of the behavior of others. He showed no interest in copying the gross or fine motor behavior of adults. Impaired by the lack of the abstract attitude, he was unable to reproduce simple models of abstract designs.

Memory.--Some of Jonathan's auditory memory functions were intact as exemplified by his ability to reproduce simple melodies and occasional spontaneous use of highly personalized and meaningful words. He exhibited some visual memory for objects, persons, and colors.

Problem Solving.--When he was frustrated or prevented in the attainment of his goal, he did not maintain sufficient drive to surmount the obstacle. Usually he abandoned it, failing to recognize possible alternatives. He would perseveratively pursue the same approach for a specific problem regardless of how ineffectual it had previously proven.

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Case History of Scott

Date of Birth: 6/25/50

Family History

At the time of his birth both of Scott's parents were thirty-seven years old. His father was a physician.

Scott's mother had had four known pregnancies, one of which had ended in a miscarriage at three months. Scott's sisters were seven and three years old at the time of his birth.

Birth Record

An examination of the hospital records revealed a normal, full term pregnancy. The duration of labor was not noted; however, Scott's mother stated that it had been three and one half hours. The delivery was induced. The presentation was left occipt anterior. The anesthetic was recorded as Sodium Amytal, Hyoscine, and Demerol. There were no postpartum complications recorded.

The infant's birth weight was seven pounds, thirteen and one half ounces. A circumcision was performed. Upon discharge, Scott's weight was eight pounds, six ounces.

Infancy (First-Second Years)

For the first five weeks Scott was breast fed. His mother reported that he was on self demand feedings. His father stated that Scott "suffered from colic." He was weaned from the bottle to the cup when he was approximately two and one half years old.

Scott's pediatrician noted that at three months he was treated for a hemangioma on the right anterior lower chest.

At eighteen months Scott had a severe attack of diarrhea which resulted in an eight pound weight loss. Four months later he was hospitalized for six days. The pediatric diagnosis was "acute otitis media and pharyngotracheitis."

His parents felt that Scott's motor development had not differed significantly from that of his older sisters. They reported that he walked without support at a year and climbed stairs at a year and a half.

Scott's parents stated that linguistically his early vocalizations consisted mostly of crying with very little babbling noted. According to their report he began to develop a limited vocabulary of nouns; however, at eighteen months they noted the first signs of disturbance as he stopped acquiring new words. During the severe attack of diarrhea he began to cry excessively, rock, bang his head, and twirl round objects. He became particularly fond of an old tire in the basement which he rolled as a hoop. In the absence of speech he communicated his needs by physically manipulating the significant adults in his environment. His parents felt that he responded to loud noises, recognized some environmental sounds, and generally understood when they spoke to him.

When Scott was two years old he had a mild attack of measles.

Three months later he had a second hospitalization lasting four days with a diagnosis of "upper respiratory infection with otitis media."

Third Through Fifth Years

When Scott was 3:1 he had a six day hospital admission. An examination of the hospital records revealed:

> "Scott became ill two days ago with irritability and anorexia, no known fever. Sibling has had a sore throat and otitis.
>
> "The social responses of this child are not what one would expect of a child of his age. There is a decrease in attention span, repetitional type of play, outbursts of activity in the form of screams and purposeless wanderings, and speech seems only to be of a repetitious nature.
>
> "Diagnosis.--Acute tonsillopharyngitis; mental retardation. ? etiology.
>
> "Recommendation.--Skull x-rays."

Skull Series

Four months later, when Scott was 3:5, x-rays were taken with the following report:

> "The sella turcica is slightly smaller than average. The pineal is not calcified. No unusual intracranial calcification is seen. The diploic venous channels of the left side of the frontal bone are comparatively larger than those on the right.
>
> "Findings.--Negative except for evidence of comparatively increased vascularity of the left side of the frontal bone."

As Scott's family continued to be concerned regarding their son's condition, they were referred to a child guidance clinic in a large metropolitan area where Scott was seen as an outpatient for psychiatric treatment. Although repeated attempts were made to secure the reports of their diagnostic studies and Scott's progress in therapy, which covered the ensuing two years, this clinic did not release any information. The diagnosis at that time was reportedly "atypical development."

Sixth Through Eleventh Years

Admission to Seaview

When Scott was six years old he was admitted to Seaview for residential care.

In Seaview's pre-admission questionnaire, his parents provided the following information regarding his status. Scott's weight was fifty pounds; his height forty-five and one quarter inches. He was a fairly sound sleeper, usually sleeping ten to eleven hours each night. He was not toilet trained and wore diapers to bed. With the exception of milk he had no known food aversions. He could undress himself but required complete assistance in dressing.

Residency at Seaview

The following outline of Scott's behavior in the milieu of Seaview was compiled from the direct observations of the research staff and an examination of the school records covering a period of five years and seven months of his residency. (6:0 - 11:7)

Activities of Daily Living

Eating.--Scott managed to feed himself with either a fork or a spoon. He was inept as he shovelled food into his mouth with his face against the plate. He was not proficient in his use of table utensils, seemingly because of his lack of socialization rather than a basic deficiency in motor skill. His hyperkinetic behavior at the dining room table often created a shambles. He would grab food from the plates of other children, knocking over a glass of milk in the process, or on occasion lift the table, thus scattering the entire contents to the floor.

Over the years his aversion for milk disappeared and he was described as having "an excellent appetite" with the typical childhood preference for desserts and candy.

Sleeping.--Very irregular sleep patterns occurred over this period. Usually, Scott was able to get to sleep by eight or nine o'clock but infrequently slept through the night. He often woke during the night spontaneously or when he was disturbed by the other children in the room. He rarely slept beyond five or six o'clock in the morning. Whenever he woke he invariably would create a disturbance. He might jump from bed to bed, run through the corridors, or pound on the walls. While the bedrooms were essentially bare, Scott managed to damage or destroy whatever was available. He pulled down or poked holes in the ceiling tiles, broke furniture, and tore his pajamas and bedding.

Nocturnal enuresis persisted. Even if he were toileted during the night, he might wet his bed or puddle and smear urine and feces on the bedroom floor.

Toileting.--While Scott was able to use the toilet independently, he had not acquired the culture's prescribed attitudes and was completely disinhibited. He was at ease pulling down his trousers to urinate or defecate, regardless of whether the place was public or private. He was inconsistent in indicating to his attendants that he needed to toilet. He might verbally indicate his needs, independently go to the toilet, or simply undo his trousers wherever he happened to be. During periods of heightened distress he did not bother to remove his trousers at all, defecating at will. It was rare to find his trousers not soaked through with urine. This irregular pattern became a focal point of his total problem and management. Often he was heard repetitiously saying, "Do you have to go to the bathroom?" This interrogative was Scott's echolalic reproduction representing his best effort for what he meant to be a declarative sentence.

Dressing.--Although close supervision was required, Scott was able to dress himself completely and independently. Due to his hyperkinesis and the consequent amount of time which would be consumed in dressing, he rarely accomplished this. If allowed he preferred to go barefoot.

Motor Behavior

Although he had no demonstrable motoric deficits, Scott's body was so rarely free from muscular tension that even when he was engaged in normal motor activities dysrhythmic, jerky movements were predominant. A marked pronation in his gait was evident both when walking and running. He was consumed with hyperkinetic and stereotypic activity to the extent that socially recognizable play patterns were almost non-existent; yet, within his aberrant activity, both gross and fine motor skills were evident. He was very deft in manipulating and rotating objects between the palms of his hands. While engaged in any activity he would be convulsed with paroxysms, shuddering and shaking his entire body. Because of this and his habit of assuming rigid and contorted postures, he gave the appearance of being an extremely awkward and uncoordinated child.

Linguistic Functioning

In reviewing the tape recorded samples of Scott's vocalizations, accumulated over a period of two years in the various dimensions of his milieu at Seaview, it was found that his vocal output consisted mainly of echolalia, delayed echolalia, naming, serial language, shouts, and growls. His most frequent vocalizations were loud harsh shouts, grunts, and growls which were interspersed in all of his activities. Their frequency increased proportionately to his degree of frustration or tension, adding significantly to an image of psychosis especially when they seemed to be provoked by internal stimuli.

His echolalic phrases, sentences, and serial productions were spoken in a monotone with a stilted rhythm pattern, giving equal emphasis to each syllable. Delayed echolalic productions were often repeated again and again, with each of the reproductions increasing in loudness and pitch as his tension mounted. The most prominent feature of his echolalia was his tendency to reproduce the last part of whatever was said to him. While residual skills in auditory memory seemed to be intact, many errors occurred whether he repeated sentences, the lyrics of songs, or series of numbers or letters.

His literal reproductions of the statements adults made were Scott's only propositional expressions. For example he would say, "Do you want to go to the bathroom?" "Do you want a piece of candy?" "Do you want another piece of cake?" "You are going to be hurt." "You will get a shock." "It won't hurt you, Scott." Unfortunately, many of the adults in his environment failed to recognize the communicative value of such echolalic productions. They were unable to identify which statements were requests and which were his efforts to seek reassurance in anxiety-provoking situations. The staff tended to interpret some of his verbalizations as reflections of his presumed self-destructive anxiety.

Among his most frequent verbalizations were constant references to going home and to the names of his family members, including their dog. He would say, "Mommy and Daddy are coming soon. We will go to Scott's house and we will see Mommy, Daddy, Joan, Betty, and Rex."

Many efforts were made to condition Scott to the polite phrases of "please" and "thank you." While he was able to reecho these expressions he did not use them spontaneously.

Through conditioning he had acquired a variety of number facts. This included counting beyond one hundred and some addition, multiplication, and subtraction.

In another setting some of his auditory rote memory skill would have been viewed as "idiot savant" behavior; however, as he was thought of as a psychotic child, his display of memory was cited by the staff as evidence of a "normal intelligence."

Under the patient direction of an educational therapist, Scott came to memorize written and printed words despite his continued tension, hyperkinesis, and stereotypic activity. After repeated readings of selected children's stories he made some progress in word recognition and phonics. After years of effort to teach him to write he managed to reproduce letters, numbers, his name, and a few words with the manual skill of a first grade child. Reversals, inversions, and rotations of letter and number forms occurred throughout.

Scott's response to music instruction was most successful. He learned to pick out such tunes as: "London Bridge Is Falling Down," "Mary Had a Little Lamb," and "Jingle Bells." He developed some skill in identifying the notes of the piano keyboard. While the piano maintained an all-consuming interest for him, he also took delight in a toy xylophone and a toy electric organ.

Asocial Behavior

Endless hours of hyperkinetic activity during which Scott was isolated from contact with people set up a barrier of social distance. His distorted communicative abilities and minimal socialization in the activities of daily living compounded his lack of affective contact.

Many hours of his day were consumed in his search for covers of jars or bottles, either by digging through the garbage or pleading with his attendants, saying, "I will give you a silver cover." When he had one available he would hold it on edge between the palms of his hands, and by alternately moving them up and down he would violently rotate the disc. This was usually accompanied by facial contortions, eye blinking, and a characteristic vocalization which sounded like growling. He would cling tenaciously to his "lids" becoming sorely distressed when they were taken from him. Although he preferred covers he would substitute any similarly-shaped object in this game of motion. Any doorknob which was not fastened securely would be certain to be pulled off in his perpetual quest for objects which he could rotate in his hands.

In a similar stereotype Scott would lay a bicycle on its side and spend hours spinning the wheel as fast as possible. Another pursuit of spinning discs was seen in his drive to operate the electric switches controlling heater or exhaust fans. Growling and grimacing, he would stand before them staring at the whirling blades while rubbing his palms or fingertips together. During these outbursts he excitedly would jump and dance about, exhibiting extreme muscular tension throughout his body giving the entire production an orgiastic quality.

He continued to manifest a need for head banging, but not as intensively as in his earlier years at Seaview. He had the dangerous habit of selecting the corners of door casings against which he would bang his forehead. While some diminution in this behavior occurred as he grew older, he continued to greet adults and children by banging or tapping his forehead against theirs.

Not having introjected any of the social attitudes regarding the value of property, Scott was careless and indiscriminate in his use of play materials, personal possessions, or the physical facilities of the institution. Accordingly, he damaged and destroyed property due to the difficulty of providing effective supervision and control, and possibly as a consequence of his disassociation from reality or the sheer delight in physical activity. Ceiling tiles were pulled down, siding and clapboards torn from the buildings, linoleum ripped, toilet tanks cracked, drains plugged, clothing and bedding shredded, light bulbs and fixtures broken, windows kicked in, and food spilled or smeared.

The combination of his destructive behavior and his unsocialized toileting patterns tended to elicit negative responses from the adults in charge of his care. Their active rejection abounded, being particularly evident in Scott's echolalic reproductions of their hostilities: "You are a bad bad boy." "There will be no more Scott." "Scott's all gone." "I'll rub your nose in it." "Scott's all gone in the head."

Seemingly having only been negatively affected by the years of admonishments for his asocial behavior, Scott continued to use his excrement freely. For example, when water was not available for making "mud pies" he would use his urine. He often offended the sensibilities of adults by chewing or tearing his fingernails and toenails, and by picking at open sores or skin lacerations.

Response to Frustration

Although the specific nature of the frustrating stimuli were not always readily discernible, it was clear that Scott had an extremely low frustration tolerance. He found it intolerable to delay gratification. As seen in his milieu, his hyperkinesis increased proportionately to the intensity of his frustration. When he was upset he would wildly rush about, echolalically shouting an adult's admonishment. His distress was apparent in the relative increase of eye blinking, facial grimacing, contorted squirming, and spasmodic jerking of his entire body. Muscular rigidity would increase to the point where he would actually shudder. If he were blocked in the pursuit of a particular goal he responded perseveratively, seemingly unable to shift to an alternative or substitute course of action. He would continue to pursue the same approach over and over again. The extent of these perseverative rages reached such catastrophic proportions that he seemed beyond reach and frighteningly violent. Under such circumstances Chloral Hydrate was given as a last resort.

Response to Environmental Change

Without the ability to structure unfamiliar situations, Scott manifest apparent anxiety whenever his routine was disordered or changed. He exhibited an intense need for sameness. Whenever he left the institution for a ride, a walk to the beach, or a visit home, he would repetitiously express his anxiety to return to the familiar, saying, "And then we will go back to school."

Response to Children

Scott had neither the capacity nor the opportunity to engage in socially meaningful play with other children. While he displayed some interest in other children, his contacts were limited to self-initiated gestures of greeting in which he would grasp the child's head in his hands, and tap or bang his forehead against theirs. Although he was relatively gentle in this act, it was enough to frighten the other child, blocking any possibility for further interaction. A shallowness in empathy for the needs or feelings of others was manifest as he banged, bumped, poked, or knocked down other children while dashing about in hyperkinetic activity or during rages. While he was not malicious or purposely abusive of other children, he often grabbed food from their plates or candy and toys from their hands.

Response to Adults

He both feared and loved adults, clearly discriminating between those who were punitive and authoritarian, and those who were permissive and acceptant. He responded positively to the gentle understanding of certain adults. He was content to sit quietly, cuddling against them. When he had the total attention of an adult he functioned more adequately, becoming calmer and more amenable to direction in task-oriented activities. He made efforts to exclude other children from his "private" contact with these adults. He clearly expected adults to respond to his verbalizations or physical manipulations and became readily distressed, exhibiting perseverative behavior, when they did not fulfill his needs. He was viewed by most of the adults in his environment as an unresponsive child largely because they thought he ignored their verbal directions.

Health and Physical Status

Eleven months after his admission to Seaview, when Scott was 6:11, he was referred for an electroencephalogram by Seaview's consulting psychiatrist.

Electroencephalographic Study

> "The electroencephalographic tracing reveals no asymmetry. There is, exclusive of the artifact due to movement and muscle contraction, a discernible rhythmical electrical activity most of which is in the frequency range of 10-30 cycles per second. There were no spike discharges and no slow wave discharges anywhere in the recording. Exposure to flickered light over a period of approximately fifteen minutes including maximum intensity over a wide range of frequencies with the greatest concentration at circa sixteen cycles per second produced no response electrically or clinically suggestive of excessive sensitivity.
>
> "Interpretation.--This tracing revealed no evidence of localized or lateralized cerebral dysfunction and no evidence during Intermittent Retinal Illumination of excessive sensitivity to flickered light.
>
> "Clinical Correlation.--There is no evidence of cerebral damage or excessive discharge (seizure predisposition) in

> this tracing.
>
> "The use of an anesthetic was expressly avoided since it would have so obscured the cerebral electrical activity that interpretation even of this degree would have been impossible."

Seaview's consulting psychiatrist made the following notes when Scott was 7:0 after one year of residency.

> "Scott looks happier, he loves the outdoors, but for the most part wanders around autistically twirling any object such as a bit of a stick. He does not now possess me exclusively when I am here, but usually wanders in the vicinity of any other child I am with.
>
> "He said a few phrases in a whisper but would not repeat them on request.
>
> "The director feels that more than any of the other children Scott finds it hard to share the attention of an adult, and almost acts as if he prefers not making a relationship if it has to be shared and cannot be exclusive."

An endless series of physical illnesses and accidents contributed to the disorder in Scott's chaotic world. Over the years numerous common upper respiratory infections, rashes, athlete's foot, and multiple boils plagued him. His hyperactivity made him especially prone to minor accidents. Lacerations of the head which required suturing occurred on three separate occasions. When he was eight years old he had german measles. He required hospitalization and a general anesthetic for the filling and extraction of teeth.

Various drugs were used to control his behavior over the years. Among these were Deaner, Phenobarbital, Chloral Hydrate, Thorazine, and Mysoline.

A few months prior to the period of experimental therapy, Scott's weight was recorded as seventy-three pounds. Because of his hyperactivity, his height could not be measured. (10:9)

Experimental Therapy

Scott was of average build for an eleven year old boy. He appeared awkward and disheveled. A haphazard choice of ill-fitting clothing which was usually stained and spotted, and a closely cropped amateur haircut combined to contribute to his "institutional" image. His continuous pattern of hyperkinesis was marked by paroxysms of grimacing and contorted posturing which further detracted from his appearance.

Scott was assigned to the male clinician. During the sixty-nine sessions of relationship therapy the process of communication was impaired by Scott's echolalic and delayed echolalic utterances which often appeared to be completely irrelevant to the immediate situation.

For the first three months of therapy Scott received 45 mg. daily of the tranquilizer Chlorpromazine Hydrochloride (Thorazine). Early in the fourth month an anti-convulsant drug, Primidone (Mysoline), was introduced with the gradual reduction of the tranquilizer. For five weeks Scott received .625 grams daily of Mysoline which was then withdrawn and the tranquilizer, Thorazine, reintroduced and increased to 200 mg. daily.

First Month

(1st through 12th session)

In the first session Scott displayed most of the aberrant patterns of behavior and speech to be seen during the ensuing months of therapy.

This session began as Scott came charging through the hall, and using his entire body as a battering ram, flung the therapy room door upon sending it crashing against the wall. He appeared agitated, repeatedly uttering the phrase, "Better get in this house," varying the volume between whispers and shouts. With the energy of a small tornado he whirled about the room on tiptoe, pulling and tugging at each door. Within moments he had examined the three doors, the two internal window screens, and the protective shutters for the one-way vision mirror.

The focus of this initial session became centered upon opening and closing the doors. After satisfying himself that the shutters used to cover the one-way vision mirror served no other function, he moved on to the toy closet door, displaying a familiarity with the padlock and hasp as he deftly unfastened them. The clinician's verbal attempts to limit this behavior met with no response, making it necessary to physically restrict him. At this point Scott moved on to the door leading to the bathroom, again displaying fine motor skill in sliding the bolt open. He flew in and out of the bathroom, pausing only long enough to get a drink of water by placing his mouth directly under the faucet. The clinician commented:

C: Scott was thirsty so he took a drink of water.

Scott: Spell thirsty

C: You'd like me to spell thirsty.

(Seemingly perceiving this as a direction for him to spell the word, Scott begins:)

S: T

C: H

S: H

C: I

S: I

.

.

(Scott continues to echolalically repeat the letters as they are provided by the clinician.)

S: T is for thirsty.

C: It can be.

Scott's motility was characteristically interspersed with sudden violent jerking, in which all four limbs flailed outward from his body, or were drawn inward with contractions and tightening of every muscle fiber. The enormous muscular tension accompanying these alternating contractions and extensions set up tremors involving his entire body. A major component of this hyperkinetic behavior was the twisting and contorting of the entire musculature of his face and neck which produced twitching, eye blinking, pharyngeal and laryngeal tension. The sounds which he produced during these outbursts reflected the intensity of his muscular tension. As the air passed through his constricted larynx, the sounds evoked were animalistic grunts, groans, growls, barks, yips, and howls.

As part of his exploratory activity Scott had only momentary meaningful contact with the available play materials. He quickly satisfied his curiosity about the crayons by sniffing and smelling them, rapidly followed by grabbing a piece of paper to scribble on. With complete disinhibition he dumped the bag of building blocks, scattering them about the floor. His purpose in doing so was readily apparent as he selected a cylindrical block to use in his long-established stereotype of rotating objects between the palms of his hands. A similar but brief interest had been shown with the crayons; however, once having acquired the cylindrical block, he settled on this object for his rolling stereotype and kept it with him for the remainder of the session. Wildly agitating the block between his hands he moved about the room barefoot, utilizing all the available space.

Many of his movements assumed random and purposeless characteristics. He might begin to move in one direction and with a sudden jerking, twisting contortion of his body, change his course or come to a complete halt, orgiastically growling while hunching over the rapidly spinning cylindrical block. In addition, a particularly bizarre-looking gesture was made with his right arm rotating through space as if he were operating a huge crank.

Throughout the session he made frequent attempts to play with the door leading to the hallway. Each time he would pull it open, the clinician reinforced the limit both verbally and physically. He seemed unable to comprehend the rational explanation of the limits offered by the clinician as to why he could not use certain doors or play with the protective internal screening on the windows. His focus was finally directed to the bathroom door as the only door which he could use freely. He sat on the bench which happened to be near the door and from this vantage point used a variety of techniques to move the door back and forth; sometimes actually closing it, and other times just swinging it to and fro on its hinges. It was interesting to note that he used his bare feet, elbows, or forehead to manipulate the door so that he would not have to abandon his preoccupation of rolling the block with his hands. It seemed that the glass doorknob held a particular fascination for him as he would lean forward and crouch over the doorknob, spinning the block in his hands while emitting animalistic noises.

It was known that Scott had a longstanding interest in doors and locks and that he was capable of spending considerable periods of time manipulating doorknobs, latches, slide bolts, or keys. It did not seem that he had an innate curiosity in the mechanical aspects of the operation of doors and locks, but probably that he was essentially apprehensive about being limited in his freedom of movement. After five years of residency during which time, for safety's sake, he had regularly experienced being locked in or out of many rooms and buildings, it was surmised that his preoccupation with the doors during this session reflected his anxiety regarding the boundaries of the therapy situation. As part of this theme, BoBo the puncho toy, was dragged into the bathroom and abandoned there for the remainder of the session.

(Scott returns to the therapy room and continues to violently rotate the cylindrical block in his hands. He exhibits extensive grimacing and growling.)

S: The door is open. (He slams the bathroom door shut as he whispers beneath his breath) That door have to be closed. (Pauses, then shouts) That door have to be closed! (Pause) The door is open. That door have to be closed.

C: Yes, many doors have to be closed, but some doors can be open.

(As the clinician speaks Scott sits momentarily on the bench and continues to grimace, twist, and growl. Then he jumbs up and in a tense whisper says)

S: O--pen. O--pen. O--pen.

C: Many things are closed. You closed Mr. BoBo in the bathroom. (Pause) Mr. BoBo is out in the bathroom.

S: (Throwing himself on the bench, he continues in a tense whisper) The door is open. (Then shouting) That door have to be closed!

(During these few moments Scott is convulsed with tension throughout his entire body. He has opened and closed the door several times, pushing it shut with his shoulder as he rolls the block between his fingertips. In opening the door he uses only his fingertips while the block is locked between his palms.)

S: (Shouting) The door is open! (Pauses, and then in a whisper) That door have to be closed.

(Wildly flinging the door back and forth on its hinges, he jumps up and down and suddenly throws himself into the clinician's lap. He emits yips, barks, and growls.)

C: You'd like to sit in my lap.

S: (Echolalically whispers) Sit in my lap. (Pause) Sit in my lap. Sit in my lap.

(Peter's hysterical screams are heard in the background; however, the clinician is unaware of this commotion. Scott, on the other hand, is immediately distracted by the extraneous stimuli.)

S: (In a tense whisper) Peter, Peter, Peter! Get away from the door!

C: (Questioningly) Peter should get away from the door?

S: (Whispering) Peter, Peter, Peter, Peter, Peter.

(Scott repetitively whispers, then shouts this phrase as he jumps up from the clinician's lap and runs about the room, emitting a continuous stream of unintelligible mutterings. With a sudden leap he grabs at the wall light fixture.)

C: We'll leave the light up there.

(In order to enforce the limit it is necessary for the clinician to physically prevent Scott from tearing the fixture from the wall.)

S: (Whispering) Leave the light.......Yip! Yip! Yip! Peter, Peter close the door. (Pause) Grrrrrrrrrrr Grrrrrrrrrr Stay over there. (Pause, then he shouts) Stay over there!

C: (In an effort to clarify the meaning of this phrase) You stay over there? (Pause) You want me to stay over here?

It was not until months later that the clinician recognized that these phrases were Scott's echolalic reproductions of prohibitions made by his attendants.

(Scott jumps about in front of the mirror, grimacing and studying his image while flipping the shutter back and forth. He then returns to the bathroom door, kicking some blocks and a ball which are in his path. He mutters and growls unintelligibly.)

C: Scott has found out all about the doors.

(His body tensions have reached fever pitch as he ferociously contorts his entire body while opening and closing the bathroom door.)

S: (In a half growl he mutters) Do---o---r---z Do---o---r---z

C: Many doors.

S: (Whispering) Door-z-o-pen

C: Doors do open.

S: (Echolalically whispers) Doors do open.

C: Scott knows that a door is to open.

S: (Whispering) Door is to open.

C: You also know a door is to close.

S: (Extensive growling is followed by shouting) Get over there! Get over there!

(The pharyngeal and laryngeal tension is so intense that these utterances sound more animal than human. Scott is so absorbed and seemingly out of contact that the clinician attempts to relate to him by imitating his strange vocalizations. Scott's response is an immediate, but momentary, cessation of activity as he looks smiling towards the clinician, but quickly resumes his mutterings.)

S: (Whispering) Close the doorrrrrrrr. (Growling) Close the doorrrrrr. (Loudly) The girl that closed door is all gone. (Pauses, then shouts) The girl that closed door is all gone!

C: Scott feels that people who close doors go away.

S: (Produces noises which sound like barking, then he suddenly blurts out in a high-pitched squeak) 'H' just like an 'I.' 'H' just like an 'I.' (Whispers) 'H' just like an 'I.' 'H' just like an 'I.' (Loudly) 'H' just like an 'I.' (Whispers) 'H' just like an 'I.' 'H' just like an 'I.' 'H' just like an 'I.' 'H' just like an 'I.'

C: 'H' sometimes looks like an 'I.'

S: (Loudly) 'H' just like an 'I.' (Whispering) 'H' just like an 'I.' (Loudly) 'H' just like an 'I.' (Whispering) 'H' just like an 'I.' 'H' just like an 'I.'

C: (Imitating Scott's voice quality and phrasing) 'H' just like and 'I.'

(For a full five minutes the clinician continues to imitate this phrase and attempts to approximate Scott's unusual vocalizations. The clinician also incorporates imitations of Scott's motor behavior wherever possible. These exchanges take on the character of a game with Scott giggling at the clinician's imitations.)

(Scott's hyperkinesis continues unabated. He jumps up from the bench, suddenly sits down again, then moves to the floor, sitting cross-legged before the bathroom door. He continues to flail about, but tenaciously clings to the cylindrical block and perseveratively manipulates the door.)

S: (Whispering) 'H' just like an 'I.' (Pauses, and with no apparent stimulus he suddenly whispers) We don't do things like that. We don't do things like that.

C: Scott says, 'We don't do things like that.' Is that what you said Scott?

S: (Echolalically) Is that what you said (Without pausing, clearly and distinctly) That's the open silver door.

C: You feel that is an open silver door. (Pause) It looks green, but it also looks silvery. I guess because of its shiny........

S: Door. Shiny door.

C: Shiny glass handle.

(The clinician surmises that Scott's reference to silver in relation to the door is stimulated by the sparkle of the glass doorknob as the bright sunlight strikes it.)

S: (For the next few moments Scott produces hoots, growling noises, and the phrase) 'H' just like an 'I.'.......

This theme of similarities continued through to the termination of the session with Scott substituting, "Silver door just like a white door," and, "White door just like a brown door," for the phrase, "'H' just like an 'I.'"

Within the next few sessions, Scott's absorption in doors diminished. As he experimented with BoBo by alternately locking it in the bathroom and then releasing it, he seemed to work through his own apprehensions about being constrained in his freedom of movement. While he continued to display "escape" and "run away" behavior in other areas of his milieu within the institution, it appeared that he had come to recognize and accept the boundaries of the therapy situation.

During this first month of therapy other themes evolved as Scott gradually became involved with the play materials. Considerable interest was evinced in the building blocks. He would always select a few to keep aside for his rolling stereotype. His focus was largely on dropping the blocks and picking them up. He evolved a variety of techniques as he repetitiously dropped a block from the table, the bench, or his lap. A favorite activity was to tilt the table sending all the blocks tumbling to the floor, at which time he was quite content, giggling and laughing, as he carefully returned each block to the sack. This theme of dropping toys was also manifest in his handling of BoBo. He would lift BoBo into the air and allow it to drop to the floor with a crash. Similar to his handling of the blocks, he would set BoBo on the table or bench so that he could then knock it to the floor. Gales of laughter were evoked each time BoBo rebounded and struck Scott.

The blocks were further used to satisfy Scott's need to order and count. At times, he would dump the blocks on the table and set about carefully ordering them according to size and shape. This was usually followed by his counting the number of blocks in each pile. The only constructions which he ever made with the blocks were these simple towers. Despite the fact that all of his activity was interspersed with copious amounts of spastic-like behavior, he was able to construct a tower of twenty-six blocks.

His perpetual interest in rotating objects between the palms of his hands was manifest in his use of the nursing bottle. Upon discovering that he could unscrew the top of the bottle he quickly pulled the nipple from the cap, thus adding the cap to the other numerous objects which could be rolled between the palms of his hands. In all of his contact with the play media he seemed to be constantly assessing their potentialities for use in this rolling stereotype. Even when he brought a cover or a lid with him to therapy, he would seek out a rollable object from the therapy materials, keeping his own supply in reserve. He would vacillate, sitting quietly and contemplatively, slowly and delicately rolling the object back and forth between his fingertips at one moment; and then, suddenly, violently, and even ferociously, set the object in motion with every ounce of energy at his disposal.

His entire body would become consumed in this stereotypic activity as every muscle was locked in rigid trembling contractions, with the exception of his fingers and hands which flew back and forth in blurred movement. Because of the increasing tautness of his muscles his body soon became contorted, being drawn into a crouch so that he appeared to be hovering over his "magical" hands.

This behavioral configuration combined with the ever-present production of animalistic noises contributed to the bizarreness of his appearance. Although he seemed completely absorbed in his game of motion, it was observed that he was able to maintain contact with other aspects of his immediate environment through his use of other body parts. He would use his elbows, forehead, shoulders, or feet, to touch, move, or push any objects within close proximity.

This activity had the quality of isolating and removing Scott from possible contact with the clinician. Interaction had been limited mainly to Scott's echolalic reproductions of what the clinician said. Having experienced some moderate success by imitating his vocalizations and motor behavior, the clinician pursued a more active role, intervening directly by imitating Scott's bizarre stereotype by attempting to assume the postures and mannerisms which Scott exhibited. It was discovered that Scott was readily amenable to varying the speed with which he rolled the object, in response to the clinician's model and verbalizations, "You can make it go very fast. You can make it go fast. You can make it go very slow, and you can make it stop!" His readiness to modify this behavior suggested that a shift could be facilitated by the clinician's active intervention into his stereotypic play.

By contrast to his responsiveness in this situation, difficulties continued to be encountered in attempting to set limits on his behavior. By the end of the month the clinician had learned that Scott did not heed any verbal restrictions on his behavior regardless of the number of times they were repeated. Only with the addition of gestures or physical manipulation was it possible to establish any limits.

While Scott's mood varied from session to session seemingly dependent upon the nature of his experiences prior to coming to therapy, one facet of his behavior remained relatively constant. He seemed strongly driven to maintain contact with the clinician on a verbal level. While his endless vocal productions were, for the most part, unintelligible many clearly stated phrases and sentences were directed to the clinician. It appeared that he expected a specific response to his verbalizations as he would continue to repeat a phrase until the clinician responded. The content of his verbalizations fell into two categories: those that were statements of fact to which he expected confirmation or correction; and those that were reproductions of the statements of adults. It seemed that when Scott made such statements as, "'H' just like and 'I,'" "The door is open," "The door is closed," "Silver door just like a white door," "White door just like a brown door," he was asking the clinician to verify his perceptions of reality. Prohibitive phrases comprised the bulk of his delayed echolalic utterances: "Don't go in there," "You'll fall down and hurt yourself," "I told you not to do that," "I will put it on my report," "Don't let Joe fall down the stairs," "We don't do things like that," "Better get in this house." He was not heard echoing any positive comments. These statements were repeated many times, both in whispers and in shouts; however, Scott never expanded or elaborated these themes notwithstanding the clinician's reflections.

Within this category of delayed echolalic utterances there were occasional productions of interrogative statements such as, "Do you want to go to the bathroom?" which he used in place of the declarative form. When he made such requests as, "Spell yellow. Spell green," it seemed as if he were recreating an earlier learning experience; in essence, providing himself with the structure necessary to practise. He would repeat the request until the clinician redirected the request to him, at which time he would spell out the word. Another distortion in syntax occurred with the substitution of declarative forms for the interrogative as he would say, "I will tie the balloon," but meaning, "Will you tie the balloon?"

During this month a persistent theme evolved in association with balloons. Having discovered that balloons were available as part of the regular play materials, Scott would quickly and efficiently inflate a balloon to its maximum size immediately upon entering the therapy room. With a display of fine motor skill he would carefully hold it by the neck and hand it to the clinician, saying, "I will tie the balloon." As soon as the clinician tied the knot Scott would drop the balloon to the floor and break it by stepping on it with his bare feet. This was followed by abounding euphoria in which he would reel about the room convulsed with paroxysms of completely disinhibited laughter. As soon as he had broken the two balloons which were available in each session, he was able to move on to other activities.

Unlike Scott's pattern of incontinency in his milieu, a singular episode of toileting difficulty occurred during this month. While Scott frequently arrived for therapy with his trousers soaked through with urine, only on one occasion did he actually fail to use the available toilet facilities. While standing at the table playing with clay and seemingly unaware of his needs, he released the entire contents of his bladder. When the clinician discovered the pool of urine on the floor, he quietly proceeded to sponge it up. Scott readily accepted the offer of an additional sponge and without hesitation participated in cleaning up. The clinician felt that this was a fortuitous occurrence, providing an opportunity for the clinician to demonstrate his acceptance of Scott's basic bodily functions.

Although Scott had been described by the staff as an extremely difficult and destructive child, only one display of a seemingly uncontrollable urge to destroy was observed in this month. He was continually drawn to a worn and chipped edge of a window sill, where he would gnaw and chew on the exposed wood. The setting of limits in this, as in other areas, required physical intervention by the clinician. The clinician felt that Scott's eventual acceptance of this limit was a result of the constancy with which it was set. Gradually he came to recognize that the clinician would limit any behavior which was destructive of himself, the clinician, or property with the exception of expendable materials.

Second Month (13th through 26th session)

Scott's eagerness to go to therapy was firmly established by the second month and continued to be manifest throughout the course of therapy. It was sufficient for Scott to see his clinician in the play yard to provoke him to run toward the clinician, saying, "Wakstein go to school." Notwithstanding the research staff's efforts to explain the nature of the therapy activity, it was apparent in Scott's remark that his attendants perceived the contact as a school activity. His use of the clinician's last name also reflected his usual practice of omitting the conventional titles of Mister, Missis, or Doctor. Further, it seemed that he was unable to form adequate concepts of temporal relationships as he would make this request at any time during the day, becoming agitated and distressed when his wishes could not be fulfilled. When it was actually his therapy time, he required only the visual presence of the clinician, or a brief call summoning him, to initiate his wild dash to the therapy room. His eagerness was so intense that the clinician instituted the practice of taking him by the hand and together they would walk quietly and calmly.

His immediate interest when entering the therapy room continued to revolve about the balloons. When they were not available he would ask for them saying, "Green balloon," often substituting any other color which entered his mind. His confusions in language useage became apparent as he would variously request that the balloon be tied by saying, "May I want to tie it," "I will tie the balloon," "May I want me to tie it," or, "May I want the balloon tied." Although the clinician attempted to engage Scott in playing with the balloon as a ball, the breaking of the balloon remained the major focus.

Another prominent need exhibited in the early moments of each session was Scott's thirst. Because of his general pattern of incontinence, his attendants attempted to limit his water intake. Thus, when he found that he had access to the bathroom sink, he made use of it freely. In his great haste and seeming thirst, he would gulp mouthfuls of water directly from the faucet even though a glass was readily available. On one occasion when the clinician offered Scott a glass, requesting that he provide the clinician with a drink of water, he demonstrated that he had been conditioned to this task by rapidly responding.

While his fluid intake during therapy was high he did not display his usual pattern of incontinency, taking advantage of the toilet whenever the need arose. It was interesting to note that he rarely unfastened his trousers, but rather pulled them down over his hips as he stood to urinate. As Scott's hands were usually preoccupied in his rolling stereotype, it did not seem unusual that he did not hold his penis to direct his stream. Even when his hands were free he did not engage in the usual boyhood experimentation of aim and trajectory with his urine stream. It became apparent why Scott frequently appeared so disheveled, as he made little or no effort to rearrange his clothing after toileting.

While Scott frequently used the toilet for urination during therapy sessions, there was only one session when he defecated. He had arrived in a highly agitated state, displaying more than his usual amount of hyperkinesis. The last half of the session was consumed in the production of a bowel movement. Even in this activity there was no diminution in his hyperkinesis as he intermittently sat on the toilet and jumped about the room while verbalizing, "Push out all the B. M."

While there was variability in the intensity of his hyperkinesis from session to session, it was ever present and all pervasive. Moderate diminution was noted accompanying specific bodily discomforts. For example, he was significantly quieter during one session in which he was troubled by a bee sting on his ankle. Scott had acquired the recognition that the application of cold water might soothe a discomfort, demonstrated by his spontaneous pouring of a glass of water over his ankle and bare foot. A lack of socialization was exhibited as he was completely unconcerned that he was pouring glass after glass of water on the bathroom floor. When the clinician directed him to place his foot in the sink bowl, Scott was immediately responsive. After sharing in wiping up the pools of water on the floor, Scott returned to the therapy room, sat at the table, and began a now-favored activity of playing with Plasticene. While he manipulated the clay he sporadically reached down to scratch his ankle accompanied by the delayed echolalic verbalizations of, "Don't scratch it. You'll make it worse," "You will make it irritated," "It is itchy. Spell itchy."

At this point in the therapy process, Scott was unable to spend more than two or three minutes engaged with the various play materials on the table. Whatever his activity, whether he sat on the bench alongside the clinician or stood with his foot resting on the bench, paroxysms of his usual stereotypic behavior were present. He would sporadically but vigorously manipulate the clay, rolling it out into long thin strips, shredding it into bits and pieces, or flattening it into discs which approximated the shape of his favorite bottle covers. His sniffing and smelling of both his fingertips and the clay, a pattern which occurred only minimally with other play materials suggested that the Plasticene provided an acceptable substitute for feces. The plasticity of this medium afforded him an opportunity of venting aggressive and angry feelings through twisting and tearing it apart, which he did freely, accompanied by fierce growling noises.

The wooden building blocks had become Scott's most used play material. Among the varied activities with the blocks, the clinician's constructions of towers maintained his interest as he would sit intently studying their growth and waiting patiently for them to be completed so that he could joyously knock them down. Scott seemed disinterested in creating anything other than simple square block towers which he would then use to practise number facts. A distinct increase in his interest in numbers developed during this period due to the intensive stimulation of a new attendant who spent hours with him each day practising the mechanics of addition, multiplication, and subtraction. Over the next two months these activities involving numbers became a significant component of each therapy session. Of the various shapes available in the pile of building blocks, Scott's attention became focused upon the square blocks, possibly because their number exceeded any of the other shapes. He frequently repeated the previously seen construction of stacking all the square blocks into one twenty-six block tower, counting each block as he piled one on the other.

Often Scott repeated the pattern of organizing the blocks into eight piles of three. As he selected the square blocks from the assorted pile, it was observed that he experienced an undue amount of difficulty as the number of square blocks available diminished. It was as if he were experiencing a figure-ground problem in discriminating between the few remaining square blocks and the various other shapes in the pile. As the number of piles of three blocks increased, he was frequently seen making the error of adding a fourth block unnecessarily. He exhibited a capacity for self-correction by counting the number of blocks in the existing piles, thereby discovering his error.

The following excerpt from the fourteenth session was representative of his verbalizations while actively engaged with the blocks.

(Scott is heard reproducing an approximation of the noise of the motor-driven lawn mower which can be heard in the background.)

S: One, two, three. (Pause) Four, five, six. (Pause) Seven, eight, nine.

(Scott fingers the blocks, pauses, and looks around the room while he produces more motor noises.)

C: Scott looks around the room and takes in everything he can see.

S: Three threes and three threes.

C: Three threes and three threes............

S: Make six threes are eighteen. (Pause) Make six threes.

C: Six threes are eighteen. That's right! (Pause) You are really interested in doing a lot of counting.

S: Twelve threes and three threes.

C: You must be practising your threes.

S: (Mumbles unintelligibly)......threes. Prac---ti---sing--- your threes. Between your threes. One one and one one.

C: One one and one one......

S: Two ones are two. (Whispering) Two ones are two.

C: Yes. What else would you like to know?

S: One, two, three. (Pause) Four, five six. (Pause) Seven, eight, nine. (Pause) Ten, eleven, twelve. (Pause) Thirteen, fourteen, fifteen. (Pause) One, two, three. (Pause) Four, five, six. (Pause) Seven, eight, nine. (Pause) Ten, eleven, twelve. (Pause) Thirteen, fourteen, fifteen. (Pause) Sixteen, seventeen, eighteen. (Pause) Nineteen, eighteen, nineteen. (Pause) Twenty, twenty-one, twenty-two. (Pause) Twenty-three, twenty-four. Eight threes are twenty-four. (Increasing loudness) Eight threes are twenty-four! Eight threes are twenty-four!

C: I think that.........

S: Eight threes are twenty-four!

(The clinician arranges the blocks into eight piles, each containing three blocks.)

C: Does that make it right?

S: Eight threes are twenty-four. Eight threes are twenty-four.

C: That's right. Let's try something different.

S: Eight threes are twenty-four.

C: Yes. You've practised that many times.

S: (Whispering) Eight threes are twenty-four.

C: Let's try something else.

(As the clinician organizes the blocks into three piles of eight blocks each, Scott pushes into his lap.)

C: You want to sit in my lap. I'll show you this.....

S: (Interrrupts the clinician with the production of more motor noises.)

C: Now how many are there in each pile? (As Scott does not respond the clinician points to each pile.) How many are in these? (Pause) Eight---eight---eight. Three eights are..........how much?

S: Three eights.

C: We just did eight threes. How much are three eights?

S: (Using his forefinger to point to each block, Scott resorts to serial counting from one to twenty-four.) Eight threes are twenty-four. Eight threes are twenty-four.

C: Now, how about three eights?

S: Eight threes are twenty-four.

C: What do you think about three eights. Are three eights twenty-four?

(Modifying the form of presentation by introducing the reciprocal becomes too abstract for Scott. He abandons his effort and begins an activity with which he has had previous success.)

C: Are we going to make a tower? A big, tall, tower.

S: Tall tower.

(Laughing, giggling, and humming, Scott carefully puts each block in place. Then, he begins to produce more motor noises.)

C: You are listening to the lawn mower out there in the yard. I think you hear the grass-cutting machine.

S: Cutting the grass machine. (Pause) One, two, three. (Pause) One, two, three, four, five, six, seven, eight, (he continues subvocally counting serially to twenty-six) ....twenty-six blocks.

C: There are twenty-six in that tower.

S: Twenty-six blocks.

C: Twenty-six blocks in a very high tower.

S: Twenty-six...(continues to count serially in half whispers to forty.)

C: They are square blocks. (Pause) Twenty-six square blocks.

S: Eighty and eighty. Eighty and eighty.

C: Eighty and eighty are........

S: A hundred and sixty.

C: That's right. One hundred and sixty.

S: (Mutters unintelligibly)

C: (Interpreting the mumbling) How old are you?

S: Forty.

C: (Questioningly) You are forty?

S: Forty and one.

C: Forty and one are....

S: Forty-one.

C: Forty-one and one makes forty-two.

S: (Echolalically) Forty-one and one makes forty-two. (Pause) Forty-two and forty-two.

C: Eighty.......

S: Four.

C: (Nodding his head) Eighty-four.

S: Eighty-four, eighty-five, (continues counting serially to one hundred.) A hundred and a hundred.

C: Two hundred. One hundred and one hundred makes......

S: Two hundred.

C: That's right. One hundred and one hundred makes two hundred. You really are very interested in learning numbers.

S: Two hundred and two hundred.

C: You tell me.

S: Two hundred and two hundred.

C: (Encouragingly) You tell me.

S: That's four....(as if uncertain, he whispers) hundred.

C: Uh-huh.

S: Two hundred and two hundred is four hundred.

C: That's exactly right.

S: Four hundred and four hundred....(pauses)....eight hundred.

C: Scott is really asking me questions about numbers. All you would need to say is, 'Tell me how much,' and then I could really know that you are asking a question. If you said, 'How much is two hundred and two hundred...'

S: Makes four hundred.

C: That's right. But you see if you ask a question then I really know. Of course, I understand that you are asking a question. There are a lot of things you want to know. (Pause) You know it's about time.....

S: Fifteen hundred.

C: Fifteen hundred and fifteen hundred. How much do you think that is?

S: Thirty hundred.

C: Yes, that's a lot.....

S: Thirty hundred and thirty. Thirty hundred and thirty. Thirty hundred and thirty.

C: Oh boy, that's a lot.

S: (Echolalically) That's a lot.

Within the course of this and subsequent months of therapy, it became clear that Scott had the capacity to acquire the mechanical aspects of the arithmetic process through auditory memory. His heavy dependence on constant practice and serial counting indicated a deficiency in arithmetic concepts. This was particularly evident whenever numbers were presented in a structure other than the way he had originally learned them.

Scott continuously expressed doubt in his own language skill by repetitiously stating and restating a thought until he got confirmation or correction from the clinician. Many examples of this phenomenon occurred in his practice with numbers as well as in other areas of language. For example he suddenly blurted out, "Three blades on the sticks." When the clinician did not immediately respond because of the seeming irrelevant and aberrant quality of this statement, Scott perseveratively restated, "Three blades on a stick. Three blades sticks." It was not immediately apparent to the clinician that Scott had made an association between the three blades of a fan and the three long blocks he happened to be playing with at that moment. It seemed as if Scott's need to restate whatever he said, each time modifying it slightly, suggested that he was never quite sure and was searching for the correct words. Further, with each restatement his volume and pitch levels increased. In all of Scott's attempts to express or display his knowledge he experienced frustration because of the poverty of his expressive abilities.

There were few opportunities to assess the specifics of his expressive language skills; however, incidental to his use of the play materials, it was possible to observe his capacity to name objects. A collection of wooden models of farm animals were usually present among the available play materials. On several occasions the clinician asked Scott the names of the various animals. He was able to correctly identify the horse, but he became completely confused in his efforts to name the other animals giving erroneous substitute responses. It was discovered that it was not only that Scott was unable to evoke the correct names of the animals but also that he could not identify them even when the clinician provided their names.

A somewhat more successful display of language ability was demonstrated when the clinician and Scott stood before the one-way vision mirror. Scott enjoyed studying his own image in the mirror, frequently interrupting any activity to spend a few moments making faces before the mirror. Each time he was asked to identify the mirrored images his responses took the following form:

C: Who is that in the mirror?
S: Scott.
C: Scott who?
S: Scott Snow.
C: And who is this? (Pointing to himself)
S: Wakstein.

When requested by the clinician to identify facial parts Scott readily responded, pointing to and naming his eye, nose, mouth, and neck. Then, suddenly he might turn to the clinician and yell, "Spell face!" Scott's request to have the clinician spell words had become a conditioned exchange emanating from endless hours of practice and drill with an attendant. In addition to responding to his requests the clinician would print the word; however, Scott showed no interest and would fail to respond when asked to identify the printed word.

Third and Fourth Months (27th through 48th session)

A high degree of variability in Scott's behavior continued to occur from session to session. It was observed that at the beginning of sessions he tended to be fragmented, volatile, and absorbed in the repetitious production of prohibitive phrases. He would storm into the room alternately shouting and whispering such phrases as, "Stop it," "The lid will make you tense," "Get out and stay out," "You're a bad bad boy." When the clinician would make an inquiry in order to clarify the meaning of his verbalizations, Scott could only respond with further productions of echolalia. While the clinician recognized that Scott did not comprehend the full meaning of what was said to him, it was noted that a quiet, relaxed tone of voice expressing acceptance functioned to ameliorate Scott's obvious distress.

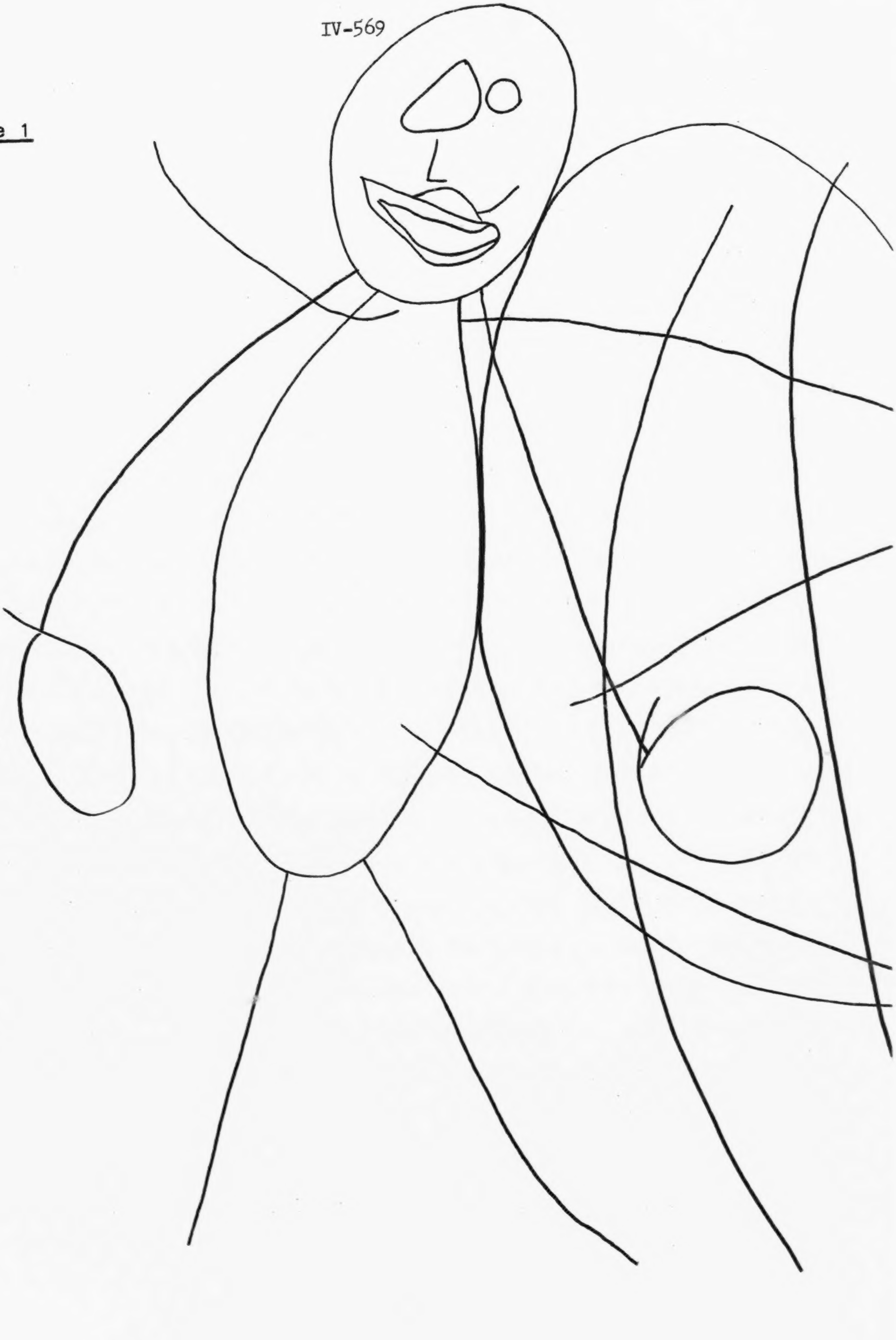
At this point in the therapy process, it was possible to observe some of the subtle features of Scott's ever-present hyperkinesis. It was established that the intensity with which he pursued his rolling stereotype was directly proportional to his level of anxiety. Once Scott had initiated the rolling, he could become perseveratively caught up in the activity and completely unable to shift; thus, the rolling itself generated further anxiety. By participating with Scott in this activity and suggesting to him that he had the power to control the extent and the intensity of the rolling, the clinician was able to facilitate a shift. A further component of his hyperkinetic behavior pattern which contributed to the bizarreness of his appearance was the repetitious and seemingly purposeless movements of his body parts. Unfortunately it was not possible to discern the meaning of the vast number of these extraneous movements; however, some of the patterns of perseverative movement which occurred were explainable as the immediate reduplication of a motor act which he had previously completed. For example, after he had picked up a block from the floor, he would reach down again and again as if the block were still there to be picked up.

During this period some modifications in his play with the balloons occurred. Whereas previously he had found it necessary to break the balloon immediately after the clinician had tied it for him, he began to exhibit a greater capacity to delay gratification as he engaged in tossing the balloon in the air. In the previous months of therapy he had been in the practice of breaking the balloon by stepping on it; however, now he varied his pattern by breaking it in his hands. The disgrammatic patterns which had been in evidence each time he asked the clinician to tie the balloon had gradually been replaced by his request, "Wakstein tie the balloon." The most significant change in his behavior was evidenced as he no longer found it necessary to pursue his balloon ritual each and every session.

The highly volatile aspects of Scott's behavior during the first few minutes of the sessions could be dissipated by the clinician's active intervention into his stereotypic activity by introducing structured uses of the play media. Scott showed an interest in playing with crayons; however, it was usually limited to rolling them between his hands or, after tearing off their paper wrappers, scraping them against his incisors thus shaving them into bits and pieces. If he were offered a piece of paper with the suggestion that he might like to draw rather than chew on the crayon, he would rapidly execute a few quick scribbles. He rarely produced anything representational usually limiting himself to linear productions and occasional numbers and block letter forms. Within moments he would randomly cover the paper with meaningless lines, often extending them beyond the perimeter of the paper and onto the table. For example, he could become absorbed in the production of a specific form such as the number "three," producing it ten or fifteen times with constant changes in its relative position; inverting, rotating, and reversing it on the paper. He invariably made reference to the color with which he was drawing, shouting out "a green 'three,'" "a brown 'five,'" "a purple 'eight,'" Also, he would add other comments with reference to his reversals and inversions, stating, "'Nine' just like a 'b,'" "That's a good upside down 'eight,'" "'H' just like an 'I,'" "'Z' just like a 'two.'" Among these productions he often produced erroneous statements, interchanging and reversing an idea such as "a blue 'M'" to "'M' is for blue"; or "a green 'Z'" to "'Z' is for green." Although the clinician attempted to explain to Scott that his statements were in error, he would continue subvocally practising these distortions.

In the absence of any pictorial representations by Scott, on one occasion the clinician offered him a piece of paper which had the outline of a head, one eye, and a nose, asking Scott to complete the drawing. In his usual hurried manner he crudely drew a figure, sketching the parts in the following order: eye, mouth, body, legs, arms, hands, and shoulders. (See Figure 1) His production was extremely primitive, marked by the absence of detail.

Figure 1



Prominent distortions were evidenced in the absence of feet and the lines extending from the body which Scott identified as shoulders, while the arms emanated from the head. When the clinician pointed to the various parts and asked Scott, "What is this?" Scott answered correctly "his body," "legs," "eye," "nose," "mouth," "hands," and "shoulders." In his typically unpredictable manner, the moment he had completed the drawing he superimposed a large "H" enclosed in a circle over his figure drawing. As previously noted his lines extended beyond the edges of the paper.

With the introduction of finger paints and their limitless possibilities it was remarkable that Scott neither attempted to portray anything nor did he exhibit the need to express himself in "messing" activities. His prime concern was the combining of colors to produce a new color. In a rare display of responsive speech Scott was able to identify his choice of color when questioned by the clinician as to which colors he wanted to use. With complete disinhibition he absorbed himself in the task of blending globs of finger paint, identifying the various colors that he used. His delight in this activity was expressed in his excited verbalizations, "Red and blue make purple...purple...purple...purple," "Yellow and blue make green...yellow and blue make green...green...green... green...grrrrrrrrrrrr." The moment he had completely blended two colors together his interest in the activity ceased. Such limited use of this medium gave further indication of Scott's deficit in conceptual processes.

Additional evidence was seen in Scott's use of the Plasticene. He spent some part of most sessions manipulating the clay but did not use it to produce any representational forms. While he would sit rolling and twisting the clay, the clinician made letter forms with long thin strips of Plasticene. Provided with a structured use of the clay Scott would reproduce and name some of the letters of the alphabet following the clinician's model; however, these productions were replete with inversions, rotations, and reversals. In a similar manner the clinician took advantage of his interest in the clay to ask Scott to copy linear abstract designs such as would be found in the Goldstein Scheerer Stick Test.[1] Scott's singular performance was to copy a two stick, right-angled design which he identified as the letter "L." In each of the clinician's subsequent presentations which increased the abstractness of the designs, Scott was unable to shift from the concrete, attempting to verbally identify them as letters of the alphabet and abandoning his efforts to reproduce them in clay. By spelling out his name in clay letters, the clinician established that Scott was thoroughly conditioned to the visual recognition of his own name.

When bubble blowing material was offered as a possible play material Scott exhibited immediate interest and demonstrated proficiency in handling the bubble blowing stick. He laughed and giggled as he chased his bubbles about the room, puncturing them in the air. His delight in this activity was manifest by his spontaneous requests for this material and his extended attention span which exceeded his usual pattern. His ever-present interest in naming colors was also exhibited in his play with bubbles as he made constant references to their color. His remarks were often specific and included such echolalic statements as, "Many colors--yellow and sea green," or "Did you see the rainbow?" The latter comment was a reproduction of the clinician's frequent reference to the spectrum seen in the bubbles.

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[1] Kurt Goldstein and M. Scheerer, "Abstract and Concrete Behavior," American Psychological Association Monographs, LI, 9.

Of all the materials which had been available, none created as much interest for Scott as a toy electric motor which was part of an Erector Set. His initial contacts with this toy were marked by ambivalence; he was both apprehensive and fascinated. Such verbalizations as, "Don't touch it you'll get a shock," revealed his apprehensiveness as a product of previously conditioned prohibitions regarding anything electrical. It seemed natural that Scott would be fascinated by the spinning action of the gears; however, as the operation of this toy was within his volitional control it afforded him the opportunity of exercising and developing his capacity to control his perseverative need to spin objects. The focus of his interest was less upon the whirring action of the gears than the manipulation of the plug and switch. In the same way that the clinician had been able to suggest that he could vary the speed or stop the spinning of an object in his hands, Scott responded to suggestions that he could mechanically control the spinning action of the gears. Upon discovering that he was free to play with the motor as he chose, Scott proceeded to experiment by plugging and unplugging the power cord in conjunction with operating the "on" and "off" switch. Both his curiosity and apprehensiveness gradually diminished as he became more familiar with the toy. The perseverative features of his limited utilization of the toy indicated his lack of the abstract attitude as he failed to recognize the potential varieties of activities in which the motor could be incorporated.

Within the growing relationship, as the clinician became more sensitive to the subleties of Scott's language behavior, it was possible to discern the origin and meaning of what had been previously incomprehensible verbal productions. It was found that many of Scott's spontaneous utterances were conditioned through previous experiences and that the words did not have precise meaning for him. Frequently he would proceed associatively, being stimulated by some statement or action of the clinician. Such an innocuous comment as, "Please move over Scott," could stimulate an obviously conditioned response from his past in which he would reply, "Move over and make room for Freddie." Freddie, who had been in residence at Seaview, had been gone for over two years. This was one of many examples in which it appeared that Scott's primary skill with language was based solely on auditory memory. On one occasion the clinician knew that Scott had been visited the previous day by the consulting psychiatrist, and so asked him, "Who came to see you yesterday?" Scott replied, "Mommy and daddy," followed quickly by, "Mommy and daddy are coming soon," which was the constant supportive comment made to him by his attendants during his periods of distress. Other examples of Scott's auditory memory functioning were seen in situations where he would give orders to himself exactly as they had been said to him. They were comprised of delayed echolalic reproductions of prohibitions made in the past and evoked when he was involved in a specific action for which he had been chastised. This was exemplified by such associative statements as, "Don't touch it, you'll get a shock," while Scott was playing with the power cord of the electric motor; or, "Be careful, you'll fall down," when he would stumble or trip.

As Scott evinced immediate interest in the presentation of any new material, a series of pictures of common objects were introduced in an attempt to more fully assess his language abilities. Although he remained highly distractible, the concretization of the task through pictorial representations significantly reduced the level of language abstraction and was reflected in Scott's level of performance. He exhibited an extensive noun vocabulary for common objects which would be familiar to an institutionalized child. His errors were manifest in substitute responses in which he focused on partials rather than wholes. For example, the picture of a living room evoked the word "chair," while the picture of a bathroom was identified as "tub."

Several examples of associative thinking were manifest. He responded with "ribbon" immediately followed by the word "present" when looking at a picture of a man's tie. A picture of a cup of coffee elicited the response, "Sugar goes in." It was interesting to note that he was unable to evoke the word "doctor" but said "Mummy and daddy," undoubtedly associating his father with the picture of a physician.

When Scott experienced difficulty in naming certain pictures, the clinician found that he could assist him by providing associations in the form of elliptical statements. "Polly wears a _____," elicited Scott's immediate response "dress." Similarly, "To wipe your hands you need a ________," evoked the correct response, "towel."

Whenever the manner of presentation was varied, Scott seemed unable to shift. Examples of this were seen when he was asked to select one picture from a group of two or three with respect to the object's function. He was shown pictures of a knife, fork, and spoon, and asked, "Which one cuts?" His response followed the previously established mode by naming the individual utensils. Returning to the elliptical form, saying, "You cut with a _________," he was then able to correctly respond with the word "knife."

Throughout this period Scott continued to display an interest in language activities utilizing the picture cards. On those days when he was relatively free from distress, it was possible to introduce new and more complicated tasks involving visual memory for word forms by providing the pictures and their printed names. While there was a relative increase in his attention span, it was still only possible to maintain his interest in this type of task for a few minutes. Accordingly, a full assessment of his word recognition capacity could not be ascertained; however, it appeared that he was able to match only those pictures and words with which he had the greatest familiarity because of the extensive practice provided by the educational therapist.

In a game in which Scott's eyes were covered he was asked to name familiar play objects, depending exclusively upon tactile-kinesthetic perceptions. His success in this task suggested the presence of some cognitive functioning in this area.

Certain trends in the growth of the relationship occurred during this period which were characterized by increasing amounts of interaction between the clinician and Scott. The most prominent aspect of this was seen in Scott's tendency to produce more immediate echolalia in response to the clinician's verbalizations. In marked contrast to earlier sessions a feeling of sharing was experienced as Scott incorporated some of the clinician's motor behavior during imitative exchanges. Standing together before the mirror, Scott and the clinician engaged in copying each other's facial expressions. This was similar to the delight manifest by Scott in imitative vocal play. His face would glow with satisfaction when the clinician would reproduce particular vocal noises which he had initiated. These exchanges had taken on the character of a secret and personalized language, expressing a feeling of mutual acceptance.

Towards the end of the fourth month of therapy, Scott's environment in the milieu of the institution became increasingly disordered. As he became involved in a series of unfortunate episodes in which he destroyed property, he came to be viewed by the institution's staff as an increasingly difficult management problem. Concurrently, Scott's medication was changed from a tranquilizer to an anti-convulsant drug. The aberrant features of his behavior became intensified in exhibitions of extreme emotional lability. Because of the multiple variables which were operant within the institution, it was difficult to assign his increase in disintegrative behavior to any particular precipitating factor; however, a central issue seemed to be the interaction of Scott's unacceptable behavior and the rejecting and punitive attitude of some staff members.

During this period of distress the clinician made every effort to provide Scott with a structure within which he could operate, organized around activities with which he had experienced previous success. Scott's increased level of anxiety and tension were patently manifest on one occasion in therapy when the clinician limited his access to the toy closet. Without protest, Scott returned to sit at the table and resumed his play, seemingly resigned to accepting the limit. The clinician was startled when some minutes later Scott's eyes suddenly filled with tears without any vocal manifestation of distress. The remainder of the session was spent in quietly cuddling and soothing him.

Fifth and Sixth Months (49th through 69th session)

For the first few weeks of the fifth month, the focus of therapy continued to be directed towards maintaining Scott's emotional equilibrium. The conduct of the sessions had assumed certain stereotypic features as a result of the clinician's efforts to maintain sameness through structured activities. In order to avert the possible occurrence of any catastrophic episodes, the clinician had to rely on cues presented in the total configuration of Scott's behavior the moment he crossed the threshold of the therapy room. Even on those days when he arrived in a highly agitated state, thrashing about the room, it was possible to help him integrate his behavior by involving him in a task-oriented situation. By engaging him in the gathering up of the blocks which he had scattered about the room in his frenzied state and counting each as he replaced them in their sack, his energies became focused and the ever-present hazard of his breaking the one-way vision mirror with a block was eliminated. The clinician continued to have balloons available as objects which he could break; thus, providing an acceptable form of release for his pent-up energies. In the early minutes of every session, the clinician would initiate a physical display of affection towards Scott to which he would respond with a "hug" or an occasional kiss. It appeared that this further ameliorated his anxiety and tension.

The delicate nature of the balance between catastrophy and calm was poignantly manifest when, on one occasion, as Scott sat in his lap the clinician casually commented, "Oh, your pants are wet." Scott's eyes filled with tears and as they rolled down his cheeks he repeated over and over, "Do you see what you have done?" Other often-repeated verbalizations which seemed to reflect the anguish Scott experienced during this period were the delayed echolalic phrases, "No more of that now," "Not the same old Scott," "And then you will be all better," "And then there'll be no more Scott."

As Scott's behavior in the milieu of the institution continued to disintegrate, a variety of attempts to modify the situation were instituted including the withdrawal of the anti-convulsant drug and the reinstitution of a tranquilizer in increasing dosages..

In contrast to the chaos he was experiencing in his wider milieu, the last six weeks of therapy found Scott exhibiting increased attention and sustained effort in task-oriented situations. An extraordinary display of calm absorption in purposeful activity was repeatedly manifest during this period in carefully structured play with the Erector Set. The clinician introduced Scott to the

Erector Set materials by guiding him in the disassembling of a bridge-like structure. With a minimum of pantomime and verbal directions in the use of the toy wrench and screw driver, Scott set about to carefully take apart each nut and bolt. As he dismantled the bridge he handed each component part to the clinician for storage. The case containing the parts was purposely kept out of Scott's reach so that he would not become distracted by the vast number of shiny pieces of metal, especially the set of wheels. Several sessions were consumed in this dismantling activity with a most unusual effect on Scott's behavior. It seemed as if all his energies were focused upon the careful, precise, fine motor skill required by the task. He became completely free from the extraneous jerking, spastic, body movements which had been so characteristic of earlier sessions. The muscular tension and rigid posturing of his body were replaced by smooth, coordinated purposeful action. In his absorption his ever-present stream of incomprehensible vocal noises, grunts, and growls ceased and only occasional echolalic responses to the clinician's comments were heard. Only momentary distractions occurred as Scott occasionally would become caught up in the spinning of a nut as he released it from a bolt.

In subsequent sessions, attention was shifted to the utilization of the Erector Set materials in assembling various structures. It was necessary that the clinician provide the components, piece by piece, and set the bolts in position. Scott would then carefully afix each nut in its proper place. He rapidly acquired the basic skill of holding the bolt in place thus preventing it from turning while he was fastening the nut. Within a few sessions his overall efficiency in manipulating these small nuts, bolts, and the miniature tools showed a marked improvement. When unavoidable delays occurred as the clinician selected or searched for a part, Scott would momentarily revert to his stereotypic behavior, but readily resume his participation in the project when the new part was available.

A lack of the abstract attitude was manifest as his only motivation for this activity seemed to be autotelic and without any comprehension or interest in an overall plan or goal. The most remarkable feature of these episodes was the quality of interaction between Scott and the clinician as he not only manifest sustained effort and concentration, but also cooperation and a capacity to accept the structure imposed by the clinician.

Scott's increased involvement in a reactive relationship was also exhibited in other activities during this period. On those days when brilliant sunlight streamed into the room, the clinician introduced a game of forming picture shadows on the wall. This activity aroused Scott's interest as he focused upon the movement of his own shadow and those which the clinician created.

Consistent with Scott's interest in musical activities, his spontaneous humming and singing of nursery school tunes was heard during therapy sessions with increasing frequency. The stimulation for his singing was carried over from a music activity which was conducted just prior to his therapy session. His capacity to reproduce tunes was indicative of his auditory memory and his ability to discriminate pitch. A further example of this was seen in therapy in his efficient operation of the musical jack-in-the-box in which he demonstrated his recognition of the tune through his anticipatory reaction to the appropriate measure when the jack would pop out of the box.

Interspersed throughout this period, Scott persistently practised his number facts. During a session in which he evinced a particular interest in number activities, the clinician attempted to assess his auditory memory span for digits incidental to other number activities. By presenting the numbers following the form prescribed in intelligence testing, it was shown that Scott was able to retain three digits. He was unable to follow the directions beyond three digits, immediately echoing each digit as it was presented. Although he was able to count backwards serially, he seemed unable to recognize what was expected of him when he was asked to say numbers in a reverse order.

He entered fully into the task of identifying numbers as the clinician wrote them. His responses were immediate and correct for two digit numbers, but hesitancy and errors were present for numbers of three and four digits. It was interesting to note that he incorporated the term "hundred" with three digit numbers as soon as the clinician provided the model; however, he made several errors reversing and interchanging units with tens and hundreds. Although he was able to verbally provide the correct answer to written addition, multiplication, and subtraction problems using single digits, he was unable to shift to the elliptical forms of the same problems. For example, if the clinician wrote "5 + ___ = 7" and asked Scott to provide the missing number he would become readily confused and give a substitute response. Scott was able to perform significantly better when numbers were presented exclusively on an auditory basis where he could rely on his auditory memory ability.

For many years, the adults with whom Scott had contact had made efforts to correct his use of pronouns. He was told repeatedly that he should use the pronoun "I" when speaking in the first person. Usually this was explained to him by the members of the staff in the following way: "Scott don't say, 'Do _you_ want to go for a little ride?'" "What you want to say is, '_I_ want to go for a little ride.'" The product of such efforts was seen when it was only necessary to say to Scott, "You want to say...." in order to have him echolalically produce a statement using "I." While the concept regarding the proper use of pronouns was not comprehended, he became minimally conditioned to use the first person when asking for things; however, the disgrammatic features remained.

Therapy was terminated when Scott left the institution for a Christmas visit with his parents. The positive relationship which had developed over the course of therapy was maintained within the structured activities which, because of their concreteness, provided Scott with an opportunity to do what he could do.

Case Summary

Medical History

On the basis of the available information regarding Scott's birth and infancy his history did not reveal an explanation for his deviancy. It was noted that at eighteen months he experienced an eight pound weight loss because of diarrhea. Concurrent with this illness his parents reported their realization of the aberrant features in his development, with particular emphasis on his inadequacies of speech.

Persistent upper respiratory infections and chronic otitis media resulted in three hospitalizations. It can only be inferred that a major factor necessitating these hospital admissions was not the severity of his illnesses but the problem of managing him in the home. Because of a diagnosis of mental retardation when he was 3:1, a series of skull x-rays were made with essentially negative findings "except for evidence of comparatively increased vascularity of the left side of the frontal bone." When Scott was 6:11 an electroencephalographic study revealed negative findings.

Previous Therapy

When Scott was about four years old, he was accepted in a psychiatric treatment program for preschool children at a child guidance center. After two years of treatment he was institutionalized.

Residency at Seaview

When Scott was six years old he was admitted to Seaview.

Five years and seven months of his residency were studied and revealed that his problems increased in relation to his physical maturation. With the exception of a healthy appetite, he experienced difficulty in every dimension of living. His irregular sleep patterns, enuresis, hyperkinesis, destructiveness, and aberrant speech persisted as problems over the years. These factors combined with his growth and development made him an increasingly difficult problem in management, requiring constant supervision. Among his most prominent stereotypic behavior patterns were the rolling of an object between the palms of his hands, eye blinking, facial grimacing, and contortions of his body.

Very little of his day was spent in purposeful activity. He was able to participate minimally in educational and musical activities. Over the five year period he had demonstrated a capacity to learn through conditioning, and thus acquired by rote memory some number facts, word recognition, and a few nursery school songs.

Experimental Therapy

Observations and impressions gained during the sixty-nine sessions of experimental therapy were as follows:

Nature of the Relationship

It was possible to develop a reactive relationship with Scott despite his overwhelming handicap in the communicative processes. It became apparent in the early phase of therapy that Scott's unresponsiveness to the clinician's verbalizations were based on an inability to integrate the symbolic meaning of language stimuli. Acceptance was successfully communicated through sharing and directly imitating his vocal and motor behavior. It was found that he perseverated in his stereotypic behavior being unable independently to shift to other activities. Through the active intervention of the clinician, by providing Scott with structure, it was possible to engage his in constructive and shared activities. Scott's comfort and increased willingness to enter into an active relationship was furthered when the clinician became familiar with the significant meaning of Scott's otherwise irrelevant, aberrant, and incomprehensible verbalizations. The relationship was bounded only by Scott's lack of the abstract attitude which prevented him from developing the language skills and empathy necessary for a relationship to reach fulfillment.

Perceptual Processes

Scott's responses to external stimuli which were observed in both structured and unstructured situations were outlined as follows:

Olfactory.--Scott did not manifest aberrant use of this modality. It was felt that his lack of socialization was reflected in his sniffing and smelling of some of the play materials.

Gustatory.--He did not exhibit aberrant use of this perceptual mode.

Tactile-kinesthetic.--It was demonstrated that Scott had adequate tactile-kinesthetic perception for common objects. Although he tended to seek intense tactile-kinesthetic stimulation when he was agitated or distressed, he did not utilize this modality as a supplement to visual or auditory processes.

Response to Pain.--Numerous examples of Scott's capacity to identify and localize his many hurts occurred during the course of the study.

Visual.--Scott was able to discriminate and identify color, letter, and number forms, some geometric forms, and a few printed words. Visual perceptual confusions were noted in his reversals, inversions, and rotations of numbers and letters.

Auditory.--Nothing in Scott's behavior suggested that there was any dysfunction in the end organ of hearing; however, he manifest auditory figure-ground disturbances by overattending to extraneous stimuli. Thus, he often appeared to be inattentive and unresponsive to relevant stimuli.

Motor Behavior

Scott's excessive display of muscular tension and his tendency to walk or run with his feet everted gave his total appearance an awkward and uncoordinated character.

The potential for normal functioning in fine and gross motor performance was demonstrated in carefully structured activities to which Scott was able to direct his energies. Other than this, he displayed a wide array of random and seemingly purposeless bodily movement in a hyperkinetic overflow of energy. His limited involvement in appropriate motor activity seemed to be a function of the sterility of his institutional environment combined with his inability to integrate verbal explanations or directions.

Perseverations of motor performance were observed not only when Scott was absorbed in stereotypic activities, but also when he was involved in socially meaningful acts. These perseverative movements were observed both prior to and following his reaching for and grasping of objects.

Vestibular Functioning.--There was no evidence of any dysfunction in this area.

Linguistic Functioning

Receptive.--Scott had become conditioned to a vast number of object and situational stimuli which evoked responses with very little or no recognition of their representational value. It appeared that while he was occasionally responsive to the speech of adults in the behavioral sense, their words did not have meaning in the sense of representational symbolism. His substitute and perseverative responses were a primary indication of his readiness to interact, but his inability to organize and integrate representational symbols severely impaired the adequacy of his responses.

He exhibited a well-developed capacity to imitate the speech of adults. These echolalic responses to verbal stimuli were the product of contiguity, frequency, and reinforcement without the recognition of their symbolic value. His receptive functioning varied in direct proportion to the relative level of abstraction. His most successful performance was elicited when gesture language was a component of the stimuli.

Although he was conditioned to matching a few printed words with their pictures, he did not recognize that these representative symbols signified anything other than the highly concrete pictures themselves.

Scott's overattention and inability to shift when involved in an activity often gave him the appearance of being disinterested in external reality.

Expressive.--An examination of Scott's peripheral oral mechanism revealed no structural abnormalities.

Scott's productions of a variety of nonspeech sounds, which were an integral part of his stereotypic behavior patterns, seemed to operate as an autotelic activity in which the sounds themselves provided reinforcement. The only communicative function that these grunts, growls, and groans served was to reflect his mood.

His expressive capacities were severely impaired in direct relation to his receptive dysfunction. He demonstrated the ability to echolalically reproduce the speech of adults with no errors in articulation. Because he was unable to formulate words, phrases, or sentences to express his own feelings, wishes, or needs he was restricted to expressing himself through conditioned echolalic reproductions. Accordingly, his verbalizations were usually disgrammatic as they were literal restatements of what adults had said to him which he was unable to appropriately restructure. His perseverative echolalic restatements demanded responses which were consistent with the original stimulus-response situation in which he had learned the phrases.

Although his echolalic reproductions were conditioned verbal responses to particular objects and situations, there were fragments of his speech behavior which suggested that he had some rudimentary conceptualization for absent objects and situations associated with some strong motivational system. His lack of the abstract attitude was seen in his inability to transcend the concrete situation, displaying only fragmentary evidence of verbal conceptualization or the utilization of symbols to represent ideas.

Time and Spatial Orientation

Scott's behavior was devoid of any suggestion that he was cognitive of temporal relationships.

He demonstrated geographical orientation through his recognition of the permanence of objects, independently finding his own way to or from any part of the building or grounds.

The nature of Scott's activity precluded the possibility of assessing his cognition of spatial relationships; however, his perseverations of reaching for objects could suggest that he was involved in a constant process of orienting himself in space.

Reaction Time

Most of Scott's responses were rapid for external stimuli which had meaning to him; however, much of the time he did not react to stimuli because of his complete absorption in whatever he was doing.

Learning

Attention.--In unstructured situations overattention to stereotypic motor activities prevented Scott from being affected by significant stimuli. Concurrent with his overattention, a high degree of distractibility further impeded his capacity to learn.

When structure was provided and a shift could be facilitated, Scott exhibited a marked increase in attention span for purposeful motor activity.

He experienced his greatest difficulty in attending to activities which involved representational processes.

Imitation.--Because of the difficulties Scott encountered in the symbolic and representational aspects of learning, he relied heavily on his ability to mimic. His major interest was the imitation of speech behavior; however, his focus was limited to the phonemic elements, disregarding pitch and rhythm patterns. A minimal capacity to imitate simple motor behavior was demonstrated.

Memory.--As auditory verbal memory was the major mechanism which allowed Scott to actualize himself and come to grips with his environment, this function was practised excessively. Accordingly, he excelled in auditory verbal memory; however, this in of itself was deleterious for learning because it became the perceptual centering of his performance. Without the wherewithal to integrate and synthesize this endowment with other perceptual processes, Scott was unable to transcend the concrete; thus, the semantic aspects of language remained incomprehensibly in the world of the abstract.

The most primitive visual memory functions appeared operant; however, the impairment in this mechanism was seen in his distorted reproductions of letter and number forms.

Problem Solving.--When confronted with a frustrating situation Scott tended to use a direct, mass action approach which often led to the compounding of the problem. Despite repeated failure or exacerbation of the frustration, Scott perseveratively pursued a single course of action while failing to recognize the possible alternatives. Although he would pause momentarily in his pursuit of a particular goal, it was rare for him to completely abandon it. He had the energy to sustain his efforts far beyond the tolerance level of most adults in his environment, often resulting in his ultimate success.

IV-591

Case History of Sandy

Date of Birth: 8/19/47

Family History

The following information regarding Sandy's parents was abstracted from clinical reports. Both her parents were of Jewish background and reportedly in good health. Sandy's father, a dentist, had no history of psychopathology in his family. When excited, he presented an occasional stutter.

Sandy's mother described her own childhood as a happy one. Her husband mentioned that her father, who had been in the meat business, was "a worrier, a real perfectionist, and very rigid." She received a Bachelor of Science degree in journalism from a large, Midwestern university. She referred to herself as "very sociable, very cautious, and a perfectionist."

Following their graduation from college the parents were married. Two weeks after the wedding, Sandy's father went into the Navy. When he returned from the service they planned to wait before starting a family until he had opened his office and established his practice. They stated that "we thought we'd set up ideal circumstances." These plans were upset by the mother's first pregnancy which ended in a miscarriage at three months. Three months after her miscarriage, she became pregnant with Sandy.

When Sandy was born her mother was twenty-four and her father twenty-eight years old. There was one sibling in the family, a sister, who was born when Sandy was two years and seven months old.

Birth Record

Sandy's mother reported that during her pregnancy her obstetrician prescribed Itibesterol as a safeguard against a second miscarriage. An examination of the hospital record revealed that the pregnancy was an uncomplicated forty week term. There had been a thirty-one pound weight gain and slight ankle adema noted during the last few weeks of pregnancy. The mother was described as "somewhat hysterical." The duration of labor was three hours, fifty-seven minutes, and the delivery was spontaneous. The position was vertex; the presentation right occipt anterior. The anesthesia was recorded as Gas, Oxygen, and Ether. A left, medial, lateral episiotomy with ritguis to the head was performed. There were no postpartum complications reported.

The infant's birth weight was seven pounds, two ounces, and she was described as a normal, newborn female without apparent abnormalities. Upon discharge the infant's weight was seven pounds, four ounces.

Infancy (First-Second Years)

It was reported that a practical nurse was employed for the first five weeks as Sandy's mother was very apprehensive about handling her baby.

Sandy was bottle fed. Her mother stated, "The thought of breast feeding was repulsive to me." A very rigid feeding schedule was followed which the parents later deplored. Sandy's father reported that she cried a great deal before each feeding and "wasn't even allowed water in between feedings." She was permitted to cry without being picked up because "we did not want to spoil the baby." She was described as a very hungry infant, consuming a bottle rapidly and wheezing extensively after each feeding. Her first tooth erupted at three and a half months.

Sandy's parents purported that their obstetrician had stated that the thymus was large, but breathing was all right after a short time. This was explained as meaning that "the thymus receded by itself." In relation to this, Sandy's early pediatrician reported:

> ". . . Early growth and development were normal. However, periodic wheezing was present during the second six months of life and was treated symptomatically with antihistamines.
>
> ". . . Frankly, the findings alluded to were never of significance. Sandy was purported to have 'thymus trouble' by a practical nurse and other than a normal thymic shadow by roentgen study no other attention was ever paid to this gland."

When Sandy was ten months old she was weaned from the bottle, and thereafter her parents reported that she refused to drink milk.

Sandy's motor development was seemingly within normal limits as she sat at six months, walked with support at twelve months, and walked independently at fifteen and a half months. Her parents reported that she "never crawled."

Sandy's parents described her as an unresponsive, inactive infant. As she was a heavy baby, they attributed her weight to her lack of activity. When her mother went to pick her up she "just lie there." She reportedly did not smile or laugh. Her parents stated that she did not seem to react to pain during early infancy.

Sandy's pediatrician reported that she had roseola when she was one year and eight months old, and varicella the following month.

Linguistically, Sandy's parents reported that she had developed a limited vocabulary of nouns by the age of twelve months and used some phrases at eighteen months to communicate her wants. She could repeat many rhymes and songs, give her full name when requested, and count from one to ten. Although they reported that she did not attend to "no" or to her name, they felt that she generally understood when they talked to her.

Despite what would appear to be very normal development her parents reported that while visiting a relative when Sandy was a little over two, they became rather concerned about her development. This was the result of comparing her with a cousin who was a few months older and who "chattered away" while Sandy said nothing.

After returning home from this visit, her parents reported that she screamed whenever her bedroom door was closed, would not stay in bed, and insisted on sleeping with them. They stated that they would push her off the bed and she would sit mournfully for hours in front of their bedroom door.

During this period, Sandy's pediatrician made the following observation:

> "Her shallow reaction to her environment was first noted in her second year of life and efforts were made to expand her social contacts, but the withdrawal was more noticeable as she grew older."

When Sandy was two years and seven months old her sister was born. Her mother felt that "an emotional change occurred in Sandy at that time. As she had to leave for the hospital rather quickly she "couldn't bear to leave Sandy and, therefore, did not say goodbye to her." During her hospitalization Sandy stayed with her maternal grandparents. She was reported to have been very much withdrawn during her mother's absence and "just kept sitting in a corner and looking at a book." While staying with them, it happened that Sandy was in the presence of a woman in an advanced stage of pregnancy. Sandy reportedly clung to this woman and, on one occasion, called her "mama."

Sandy's parents related that when her mother and the newborn infant returned from the hospital, Sandy "began almost immediately to stop her efforts at talking." She displayed many fears, stereotypically played with a string, wet herself, and remained alone for hours not seeking company. During this period she did not play with other children but watched them from a distance. She reacted with "total indifference" to her baby sister, although her parents recalled that the infant's nurse did not like Sandy and prevented any contact between the siblings. Her parents also stated that they had employed a maid who reportedly had handled Sandy roughly. This was discovered later through remarks made by their neighbors.

Increasingly concerned about Sandy's behavior and development, her pediatrician referred the family to a renowned specialist of childhood psychiatric disorders. Sandy was two years and eleven months old at that time.

Psychiatric Evaluation

> "Diagnostically, Sandy presents the typical, classical picture of a condition to which I have referred as 'early infantile autism'. . . . Sandy, though unquestionably psychotic, presents to me a slightly more optimistic outlook than the majority of these children who are much more entrenched in their withdrawal tendencies and who have not even developed a need for verbal communication."

Third Year

Following the suggestion of the family pediatrician, Sandy was enrolled in a nursery school program for normal children when she was three years and one month old. Because she was unable to be integrated into the regular classroom activities a special teacher, provided by the family, was added to the teaching staff of the school. In this way Sandy received the additional attention she required.

During this period, when she was 3:4, Sandy was referred by her pediatrician for a neurological evaluation.

Neurological Assessment

> ". . . It was related by the parents that six months previously Sandy appeared out of contact so that her parents doubted her hearing, her vision, and her mental ability. Since then she has improved considerably however.
>
> 'It was related that a new baby arrived nine months ago. . . . At first she ignored the baby. Two months ago, however, she expressed an interest in sleeping in the same room with the infant, and did so for awhile. At present she is quite attentive to the baby, and is also playing better with other children. This improvement apparently followed her attendance at nursery school which began three months ago.
>
> ". . . The parents reiterate time and again that they are certain this is all an emotional problem, and indicate their own anxiety and apprehension and perhaps guilt feelings about the situation. . . .
>
> "Sandy did not respond to direct questions except when she, herself, was interested, and then did not reply directly

to the questioner. At no time did she smile or show any change in her facial response except when crying. I understand that she has never smiled in a normal fashion.

"Neurological Examination.--So far as it could be ascertained my findings are negative. Cranial nerves, reflexes, motor, sensory, and coordinating systems revealed no defects. The child was not cooperative for the examination and displayed a very severe temper tantrum at the time, which the parents attempted to control by all methods of pampering, etc.

"Evaluation at the time of this one examination indicated no great retardation in the motor or adaptive spheres, some slight defect in language development, but very gross defect in her social and personal contacts with others.

"Impression.--As stated above, some mild retardation in language development was evident but more seriously very severe retardation in her personal social sphere was prominent. The examination and the history strongly suggest to me that emotional etiology is paramount. I would hesitate to prophesy a diagnosis of schizophrenia at so early an age and would hope that improvement in the parents' attitude toward the child may foster further improvement in the child's emotional state.

"As stated before, no conclusion can really be reached without periodic rechecks over an extended period. . . ."

Fourth and Fifth Years

When Sandy was 4:1, the family pediatrician referred them to a community child guidance center. Over the following five years Sandy and her parents were seen periodically for observation and diagnosis.

Psychiatric Evaluation

". . . The mother was a rather thin, young looking, well-dressed, very neat and alert Jewish woman who was obviously anxious about coming to the clinic and seemed intensely anxious about her own role in the development of the child's disorder but admitted she often felt irritable and hostile toward the child because of the bizarre behavior in which she engaged. She said she came from a family where the father was an extremely demanding and perfectionistic sort of person, and she felt his disapproval keenly although he was not harsh or punitive. As a result, she feels that she is now over-anxious about the opinions of other people and is constantly afraid to offend anyone. Accordingly, she has never been able to be permissive about Sandy's idiosyncratic behavior and constantly during the time that we saw her, expressed the belief that she would be able to 'train Sandy' in the behavior more characteristic of other children her own age. She seemed to feel that the problem was hers alone and she had a tendency to exclude Sandy's father from any active part.

"During the time that we have known her, she has been extremely ambivalent about accepting help of a constructive variety from anyone, and periodically when things seemed to be going fairly well, such as in school, she will begin to interfere in some way or other or to change the situation so that Sandy sometimes becomes more distressed, rather than helped.

"The primary complaints about Sandy when she came were: peculiar behavior, total inability to relate either to grown-ups or other children, manneristic behavior consisting of twirling objects and using toys inappropriately, inability to communicate verbally with other people although she was able to say words, violent temper tantrums with screaming, and spotty intellectual performance. In general, over the course of the years that we have known her, while Sandy through various school experiences has become quieter and at times has seemed to integrate better with memebers of the group, still these problems remain substantially unchanged.

". . . Sandy, who was brought up 'by the clock' has always been 'bent on routine.' The mother says, 'Now if you do anything out of the ordinary, it upsets her dreadfully.' The child is said to have a remarkable memory. She recently surprised her parents by reciting a whole Golden Book which was read to her at Christmas time. She can pick out records by their pictures. A considerable part of what little she says is made up of either immediate or delayed echolalia. As a result, there was, and to some extent still is, a great deal of pronominal reversals. She will speak of herself as 'you' and of others as 'I.' She does a great deal of 'jiggling and twisting,' which she can do over a long period of time. When she does that, she sometimes says, 'Stop twisting, it makes me nervous.' She has also been heard to say to herself, 'You are a bad girl.' There are many such literal repetitions of things that her mother has said to her previously, such as 'Don't bother me, I am cooking.'

"At this point, the parents, referring to the pronominal reversals, told me that there is a difference of opinion between them. Sandy, asking for a lollipop, would say, 'Would _you_ like a lollipop?' The mother then insists on correcting her, while the father suggests that she be left alone.

"The mother offers spontaneously that Sandy has always been more interested in objects than in people.

"At one time the mother questioned the child's hearing because she responds so poorly to verbal address, but she has convinced herself that Sandy hears well. The mother has at one time also doubted her vision and the child's intellectual potentialities but assures me now that she does not feel 'there is anything wrong with Sandy's intelligence.'"

After completing two years in the nursery school program, the school administration made the following report to Sandy's parents regarding her status:

> "Sandy seems very happy with her teacher and responds very well to her. However, she still has no interest in group activities and spends most of her time looking at books. Her teacher reads to her much of the time and has tried to encourage her to do what the group is doing. She has tried to have Sandy color, draw and paint. She will do it for a few minutes but doesn't look at what she is doing. She does it only because someone is asking her to but is not really interested yet.
>
> 'Sandy has been quiet in the class with few exceptions. When she does cry her teacher handles it very well by talking to her.
>
> "The outstanding thing that I have noticed with Sandy during this report period is that in class and on the playground she has wandered farther away from her teacher to play and allows the other children to talk to her more and to touch her.
>
> "In class her main interest is still in books and stories. She still has not shown any interest in drawing, coloring, or any kindergarten work or activities.
>
> "She responds well to her teacher and follows any directions that she gives Sandy. She talks to her teacher more than I have heard her say to anyone else.
>
> "Sandy's progress during this term's routine makes me doubly sure that specialized teaching could accomplish more. My sincerest best wishes go with her."

Psychiatric Evaluation

When Sandy was 5:11 her father arranged for the family to spend the summer months in a large, psychiatric center where Sandy could be observed in a summer activity group of autistic children in an attempt to evaluate her potentialities and conflicts during a proposed three month period, the second month to be spent in residency. As concomitant work with the parents was an integral part of the program, Sandy's mother attended a parents' group regularly. Because of the distance involved, Sandy's father visited the family only on week ends, attending the parents' group occasionally. Although progress reports were not available, the following psychiatric report was made after the first month, prior to the initiation of the month's residency.

> ". . . At no time did Sandy settle down in the office, though she occasionally alighted on the edge of a chair for a moment or two.
>
> "Throughout the following half hour, the child interested herself mainly in the playthings on the small doll house shelves, concentrating largely on wheeled toys, e.g., the tricycle, the kiddie-car, the doll carriage. Each of these was carried around the room for some minutes, held in her right hand, which was in constant motion,--in a sort of slow jiggle,--while the fingers of the left hand were constantly involved in contorted and distorted, obviously compulsive, movements. Sandy's gaze was almost exclusively fastened on her left hand. As she walked around the room, thus engaged, the youngster made a number of scarcely audible comments, each of which was, however, recognizable after her mother had interpreted. 'I have a bracelet on,' referring to my bracelet, which she did not try on her own arm when I offered it to her. Also each toy that she selected from the shelves was appropriately named--if the mother's translations are to be trusted. Following the wheeled toys mentioned above, Sandy interested herself in the high chair, training chair, toilet, rocking chair, and a rocking horse rattle, but never once in any of the dolls. Before Sandy left the office, the dollhouse shelves were in a state of complete disarrangement.
>
> ". . The mother talked of Sandy's reaction to her father's week end visits, saying that 'Monday, Tuesday, and Wednesday are always much better but by Thursday she begins asking for her daddy, and it's as though she can hardly wait for Friday, and then she simply dogs his footsteps the entire time he's here. He doesn't leave until after she's in bed Sunday night and she just seems to accept the fact that he won't be here when she wakes up Monday morning.'
>
> "The mother also explained that they were going directly to a pediatrician to see about treatment for a frankly purulent and draining area on the left leg. (This appears to be a pretibial cellulitis resulting from repeated 'digging' at a mosquito bite. According to the mother, this is a compulsion of long standing.)
>
> "Perhaps the most striking aspect of the conference was the mother's overreaction when I mentioned the overnight program. Her eyes immediately filled with tears and later she was frankly crying, 'I feel so sorry for her. I feel as though I'm the only one who can understand her. I always know exactly what she says, and nobody else can understand her, as a general rule.' . . .

> "Impression.--As before, I am not entirely satisfied with the diagnosis of primary autism. I wonder again, both whether there may not be an underlying brain injury and/or whether the process is not a degenerative, regressive one, rather than in a way simpler, primary failure in development.
>
> "Recommendation.--I should like to have a full and detailed psychological test. To my mind, an EEG would probably also be in order."

The recommendation that an electroencephalographic study be done was not followed.

Psychological Assessment

> "General.--Sandy was examined on two occasions, two weeks apart. She was much more relaxed and somewhat less destructive of testing materials on the second interview, but the length of her attention span and the quality of her output were unchanged. It seems clear that this is a mentally defective child with an overlay of severe emotional problems. The child does benefit, in the affective area, from residence at the psychiatric center. Such an experience will make her happier (with the pressures from anxious parents of being expected to adjust to family living and behave like a normal six year old, removed,) and she will become an easier child to live with. Yet the fundamental problem of defective intelligence will remain; the extent to which therapy can improve her mental functioning will not be great; and there will be the need for individual instruction by means of painstaking repetition and practical example.
>
> "Intelligence.--This child is so little able to withstand testing that no precise score derived from a single test can be stated. Selected items from three standard intelligence tests were employed at random when and if Sandy's flighty attention could be gained. The item receiving the highest credit of any was taken from the Merrill Palmer Scale of Mental Tests and was located in the 42-47 months level. It may be of further interest to know that the item referred to is one which, in this examiner's experience, is easily passed by young children whose final medical diagnosis is usually 'simple retardation' (with psychological test results in the moron range), and is failed by children who are known to have organic damage. Judgment would not, of course, be based on one single item, but, nevertheless, this result in Sandy's performance does lie in the direction of the findings obtained from the other tests administered during the two sessions. It may be further noted that success was much more even and pronounced on the Cattell Infant Intelligence Scale (with a basal age of 15-16 months) than on other tests more appropriate to her age.

"__Personality__.--Sandy can enter into a small modicum of rapport,--not the enthusiasm of the normal child used to competition and games of wit and skill,--but still there is an awareness of others, a shy response to attention and warmth, and a bit of an attempt to relate to the examiner by asking her to read aloud. Nothing lasts very long, however. Sandy darts in and out of things, wearing an abstracted expression and constantly twiddling some object of her choice. When she has fixed on an object she is so preoccupied with it that it is difficult to get her to relinquish it and to attend to anything else. The temper tantrums as well as the early delight in music are frequently found in this general pattern of psychological development.

"__Social Maturity__.--Social maturity is in line with intellectual and personality development. There is little need to elaborate since all test results, from each type of test, are consistent with each other.

'Careful interpretation to the parents plus help, if possible, in planning for Sandy's training in a suitable environment in which she can develop at her own speed will be necessary both for her welfare and for that of the other child in the family.

"Basic capacity--defective. Present functioning level--defective. C.A. 6:0 M.A. 3:0 (approximate) S.A. 3:5 (approximate)."

Sixth Through Eighth Years

Upon completion of the summer program, Sandy and her mother returned home. During the following three years, Sandy attended two or three nursery schools, each of which finally excluded her because of her asocial behavior.

During this period the family continued to be seen periodically at the child guidance center. Efforts were made to place Sandy in a special class in the public school system. When she was 6:3, the center made another attempt to accomplish testing because of the question of the proposed school placement.

Psychological Evaluation

"Sandy looked more mature when the psychologist met her in the reception room. Although her bizarre behavior was very much the same as it had been earleir, she was quieter and her actions seemed to be somewhat more controlled. Although she wandered from room to room and from object to object in the playroom there was less hyperactivity. The bizarre hand movements were still present but they seemed a little less noticeable and she also hit her left hand with an object held in the right less often. She was observed in the playroom for a period of about twenty minutes. Here her play was very similar to what it had been before. She had the psychologist help her on with an apron twice and one time put one on by herself. The new play consisted of her going over to the shelf where the dolls were seated in a row, pushing her hand against the face of each, and making scratching movements. She did this three times while she was in the room and once took one of the dolls from the shelf and brought it over to the table where she did the same things with it. Within five minutes of the time she entered the playroom, she asked for the book which she had used so much earlier by name. She said this very distinctly and later on she distinctly said, 'I want to toity!' Although she talked a great deal while she was in the playroom these were the only intelligible statements that she made. She would talk to the psychologist using a series of syllables that sounded almost like a sentence and when the psychologist would nod her head and say, 'Yes,' or 'That's fine,' she would act as if she had been given a sufficient answer and would continue.

"Because there had been no real change, testing was not attempted, and her mother was interviewed in addition to the observations made of Sandy in order to complete the Vineland Social Maturity Scale.

"On this scale she had a total score of 47 points which corresponds to an age equivalent of 3:5 years. It is the psychologist's impression that some of this retardation is due to the mother's overprotection or lack of patience with Sandy. She does not yet button her clothes, cannot wash her hands without assistance, and needs considerable help in everything that she does. It probably represents her capacity to adjust to other people but in no sense can it be considered a reflection of her intelligence. She has given indications of having a very superior memory and can recall incidents that happened a long time before. Also she has used fairly difficult words in a logical fashion."

Sandy was admitted to a primary special class for retarded children in a public school system where she remained for the next two years. (6:6 - 8:10) The following report of the teacher's observations and work with Sandy was made at that time:

"When Sandy first came to school she was very unhappy and cried much of the time. She wanted to get away from everyone

> which she did by sitting away in a corner or out in the school corridor. The crying gradually ceased and she began to relate slightly to the teacher and was less resistant to coming to school.
>
> "She seemed to be in a world of her own and looked upon the children in the room as mere objects.
>
> "After some time she was expected to do some constructive work at her desk. This consisted of strokes on a paper, a simple puzzle, or putting pegs in a peg board. At first she strongly resisted but was soon able to do some elementary activity at her desk by herself. The only time that Sandy sat at her seat were for short periods at work time or just before going home. She enjoyed music and stories but always stayed outside the group to listen.
>
> "Towards the end of this period she did relate to some degree with the other children. She would join them in the doll corner but would just sit and not contribute in any way. She would allow the children to take her around the school, in and out of the building at dismissal. She looked and asked for different children by name.
>
> "During the time Sandy attended this school, she did learn to conform to certain classroom procedures and made progress in her social adjustment and self discipline but not academically. . . ."

The child guidance center, in referring to the special class placement, stated:

> ". . . The teacher is a particularly sensitive and competent individual in dealing with emotionally disturbed children. It seemed to us that here Sandy has had her most productive experience, but recently when someone began to administer Thorazine to the child, she again became disturbed and disturbing in the school situation. She continues her placement in this special class, but because of her age and size this placement is becoming more inappropriate and some other provision will undoubtedly have to be made for her in the not too distant future."

At the end of the school year, when Sandy was eight years and ten months old, her case was reviewed and it was decided that the public school had no class that met this child's needs. Her parents were told of this decision and plans were made for Sandy's institutionalization.

Admission to Seaview

When Sandy was eight years and eleven months old, she was admitted to Seaview for residential care.

In Seaview's pre-admission questionnaire, no further information was provided as to her status at that time.

Psychiatric Consultation

Shortly after Sandy's admission, the consulting psychiatrist made the following report:

> "Sandy is a large girl rather obese particularly in the girdle area. I thought she had a rather narrow forehead. She was alert and responsive on introduction, looked at me with curiosity and rather soon began to ask me to read 'Busy Timmy' to her.
>
> "She speaks with the typical lilting inflection of the atypical children and reverses pronouns saying such things as, 'She goes marketing,' 'Your hat,' 'She sleeps in Joel's bed.' She talked a good deal and the content was entirely names such as, 'Suzie,' "mummy,' 'Mrs. Kaufman.' She speaks these names with a question as if to ask where they are. Even more prominent in her speech is a listing of foods which she also seems to be asking for and as her attendant has observed, the foods are almost entirely sweets. For example, while I was with her, she said each time as if asking for the food, 'A popsickle,' 'a cupcake,' 'a coke,' 'jelly beans,' 'a Mickey Mouse balloon.' In relation to the foods, she also asked, 'to go marketing,' 'to the drugstore,' and, 'to Wallgreens.' In this regard, after she had asked to go to the drugstore, she repeated, 'your hat,' several times, went to the shelf and clapped the hat on her head as if to get ready to go. In spite of this child's rather free use of language, she appears rather disheveled and I noticed that she simply threw the hat on her head without any attempt to adjust it.
>
> "She curled up on the couch beside me apparently quite comfortable but apart from these requests did not seem particularly interested in topics I introduced or in any attempts to get her to relate to other children.
>
> "When left to herself or when I was busy with another child, she would withdraw, sometimes into another room where she could be observed twirling her fingers or a deflated balloon and observing the twirling either with a vacant expression or an autistic smile. She asked the administrator to read the 'Busy Timmy' book and when this was being read to her she could finish the sentences and phrases in the story quite readily, apparently from memory.

"Except for the anxiety implied in the constant request for food and attention, she does not seem to be having any marked depression reactions at the present time.

"Impression.--Atypical child with rather well-developed language which is not used on a very deep level of communication but in an extremely narcissistic way."

Ninth Through Fourteenth Years

Residency at Seaview

The following three observations were made by the consulting psychiatrist during Sandy's first year of residency:

"Sandy was solemn today, rather restless. Still asking questions about various people in her past and still asking for food when seen right after breakfast, such as chicken pie, fudge, and cake.

"She did not seem very much interested in active play outdoors or in, tended to twirl objects when she was not talking and alternately to approach an adult with rather vague requests for food or her previous friends.

"I have not seen Sandy with her teacher but understand she is responsive and I think that with her language development every effort should be made to interest her in less autistic communication."

"Sandy continued to approach me with such requests as, 'Some sweets,' 'a T.V.,' and to mention names as if asking me where they were. . . . I thought she was better controlled than previously in the demands and much less intense. I noticed at lunch that she talked about sweets through the entire meal even though she was eating the main course with gusto."

"Sandy was very talkative today, asking many questions about food as usual, and also making observations in the form of questioning about various children at the school.

"It seemed to me that the questions were delivered with much less anxiety than she used to show and much less expectation and rejection. She can quite readily be diverted from the endless questioning, at least for a time, if one suggests another activity such as walking and then accompanies her.

"The director notes that she also expresses her aggression much more directly now and it has recently taken the form of pinching, which she projects on others which she later reports."

The following outline of Sandy's behavior in the milieu of Seaview was compiled from the direct observations of the research staff and an examination of the school records covering a period of five years and six months of her residency. (8:11 - 14:5)

Activites of Daily Living

Eating.--Over the years, Sandy's voracious appetite and resultant obesity became a focal concern in her care and management. She frequently demanded multiple servings of every course, especially desserts. With the exception of an occasional meal, Sandy consumed everything within her reach at the dining room table. When serving dishes or the plates of other children were left momentarily unguarded, she would snatch handfuls of food with cat-like agility and swiftness. The vigor which she exhibited whenever food was available was paradoxical to her general lethargic state. In her haste to consume whatever she could fit into her mouth, large portions of food were gulped with minimal mastication. She was able to jam an entire slice of bread into her mouth and with one forceful swallow, ingest it. This bolting of her food was accomplished without the aid of any beverage. A definite aversion for milk persisted throughout her residency. Although she could manage a fork or spoon with a primitive grasp, she preferred to use her hands. She exhibited an extraordinary intolerance for any delay between courses, seemingly expecting to eat without even momentary pauses as long as she was at the table. When any food was served which required cutting, Sandy could not bear to wait for her attendant's assistance and would grab it with her hands, ripping it apart with her teeth.

Her heightened agitation and low frustration tolerance frequently developed into paroxysms of rage in which she would do any or all of the following: scream, throw herself about, bang her head, scratch or pinch other children and adults, bend silverware, or sweep any dishes within her reach to the floor. The chaos this created necessitated her frequent removal from the dining room.

Her obesity became so marked during pubescence that periodic efforts were made to control her diet. In order to limit her caloric intake she was fed separately which resulted in some weight loss; however, it was practically impossible to restrict her intake on a twenty-four hour basis. Unfortunately, many of her attendants found it necessary to use cookies and candies in their efforts to control her behavior.

Sleeping.--Sandy had a fairly stabilized sleep pattern, averaging about ten hours nightly. Her sleep was disturbed periodically by the noises of other children or her own need to toilet. Occasionally, when she was in a particularly agitated state she had difficulty falling asleep and would remain awake for a good part of the night. Any lack of sleep made it increasingly difficult to handle her the following day. Nocturnal enuresis continued to be a persistent problem.

Toileting.--The inconsistencies in Sandy's communicative ability to indicate her need to toilet were reflected in frequent diurnal enuresis. There were occasional episodes when she would have a bowel movement in her pants or on the floor with subsequent smearing. At times when she had ready access to a toilet, she could independently take care of her needs with the exception of wiping herself. On other occasions, she might verbally indicate her need saying, "Sandy wants to toidy." If the adults in charge of her care did not respond to her request, she would not seek them out but would simply evacuate her bladder or bowels freely. Under such conditions she might then be heard to say, "Sandy wet her pants. Sandy's a bad girl." Her entire period of residency was fraught with the absence of any demonstrable progress in this area.

Dressing.--Complete supervision was required in dressing activities. It was easier for her attendants, as it had been for her parents, to dress her than to encourage self help. She was not only unable to tie her shoe laces, hook her bras, fasten zippers, or properly align buttons, but also experienced undue difficulty in putting on clothing so that it was not back to front or inside out. The process of dressing was further complicated by her incessant search for strings to twiddle; thus shoe laces, bras straps, or the loose threads of any garment were torn or pulled free. Accordingly, knitted garments were seldom worn.

The intensity of her masturbatory behavior became so pronounced during pubescence that she was dressed in slacks or blue jeans in the hope of impeding this autoerotic acitivty. On the few occasions when there was a party or a special event and she wore a dress, she would actively masturbate with complete social disinhibition.

Motor Behavior

Sandy created the image of a child with an extremely low energy level. She would invariably be found reclining on whatever surface was available. When the comforts of a bed or couch were not accessible a bench, table, floor, or the ground sufficed. She appeared lethargic, ungainly, and awkward. She would lower herself into a reclining posture with a flopping thud. If she could avoid getting up she would drag herself across the floor in order to obtain a desired object. When aroused to action, she would slowly and laboriously raise herself to walk a few feet only to resume a position of repose.

She walked with a shuffling, waddling gait with her feet prominently everted. Either walking or standing, she slouched with her head and neck thrust forward while the rest of her body sagged as if without body turgor. With her progressive increase of weight it became increasingly difficult to engage her in any activity which required even the most minimal expenditure of energy. She became resistant to taking walks which she had formerly enjoyed.

Paradoxically, while she presented extreme lethargy she also exhibited a simultaneous need for constant movement. While her body was at rest, she would provide herself with visual stimulation by keeping her head and/or hand in motion. Her right hand was endlessly preoccupied with the twiddling of strings or string-like objects between her thumb and forefinger which she held parallel to her right eye at a distance of four to five inches, while viewing this twirling motion exclusively with peripheral vision. She would intermittently rock forward and back in a limited movement principally involving her head and neck.

This could occur regardless of her posture or position.

She had developed the habit of knotting her string or tying on bobby pins, clothes pins, and bits and pieces of broken plastic toys. As with all other activities which normally would require the involvement of both hands, this was accomplished by securing the string firmly between her teeth and forming an overhand knot with her right hand. Her teeth also substituted for her left hand in untying knots. Another prominent utilization of her teeth was seen in the unique manner in which she put on jackets or coats. First, she would hold her coat in her right hand thrusting her left arm into the sleeve, and then by clamping the left lapel between her teeth she would manage to slip her right arm into its sleeve. The function of her left hand seemed to be that of a temporary receptacle.

Although she was capable of using her thumb and forefinger for grasping, she handled crayons and silverware in the gross palmar digital technique.

During activities sessions Sandy was generally resistive to any purposeful task which required the use of her hands. Her minimal use of preschool educational play materials did not exceed the level of a four year old.

Linguistic Functioning

Tape recorded samples of Sandy's vocalizations were gathered in all possible dimensions of her milieu over a period of two years. Quantitatively, her verbal output exceeded that of any other child within the group. Her verbalizations consisted of phrases and sentences which were usually inappropriate to the situation. Most of her speech could be categorized as echolalia or delayed echolalia.

Her echolalia varied from a total reproduction of lengthy statements to the reechoing of the last few words of an adult's utterance. For example, when she was asked, "Would you like a sandwich?" her reiteration of the entire question seemed to function as a statement of affirmation. When asked, "Do you want a piece of cake?" she might reply, "a piece of cake." In response to the comment, "Do you think you are going to get it by screaming?" she replied, "by screeee------eeeee," characteristically elongating and playing with the phonemic elements of the word.

While her communicative ability was grossly inadequate, she demonstrated a disproportionate skill of auditory memory in an extensive repetoire of verbal material including songs, children's stories, advertising slogans, jingles, and idiomatic expressions. These delayed echolalic utterances emanated from ordinary day to day auditory stimuli. Over the years it was reported that Sandy always enjoyed and sought having stories read to her, or listening to people's conversations, recorded music, and the radio. She had accumulated both fragments and entire paragraphs from such sources which she could evoke and would continue to reiterate in a delayed echolalic manner, hours, days, and weeks later. With few exceptions, this material was inappropriate in the situational context in which Sandy reproduced it. She would be heard blurting out lengthy conglomerations such as, "Ring the bell for United shoes. Get out and get into United shoes right now. My! My! My! And what do you think of that?"

Or, "There goes Vera with that pail of water. What is she advertising? Why Ivory soap, of course! Ninety-nine percent pure--that's what!"

Of the many examples of her delayed echolalic verbalizations the following was characteristic of their inappropriate and disorganized nature. After multiple repetitions of the statement, "Those bulbs belong to Mrs. Dow," she suddenly shifted to, "Sandy went to Dr. Astor's house." When questioned as to Dr. Astor's identity, she responded, "The baby bwoke the horsey at Hinsdale."

With the stimulation of an adult providing the initial word or phrase of a song, Sandy would launch into hour long recitals which included popular music, folk songs, hymns, and children's music. The particular renditions were readily identifiable, although her reproductions of the melody, rhythm and lyrics were not always accurate or complete. On some occasions she would repetitiously produce a familiar melody, randomly improvising her own lyrics as she went along. During these episodes she would maintain a particular phrase such as "down by the river" throughout semantically meaningless verses and choruses. Within a half hour period she would sing a chorus many times occasionally adding a verse; however, the chorus was rarely completed as she would omit a line or a phrase. For example, she would sing, "Now I must go," three times followed by, "And it ought to be a laughter, why, period."

In a like manner she would turn the pages of a picture book making such comments as, "The busy bulldozer went to sea. The tractor went with his wife. The tractor went for a walk. They each had a duck to swim and look at a book."

Under certain circumstances Sandy produced verbalizations which appeared to be responsive or propositional. Many of these statements appeared appropriate and related to what she saw occurring in her environment, i.e., "The man is smoking a cigarette," "Sadie is picking up the toys." Specific, often repeated inquiries occasionally elicited an appropriate response from Sandy. If asked, "What is your name?" she invariably answered by giving her full name. When questioned, "What shall we do today?" she might respond, "Read a book," and be able to name a particular story. To the question, "What did you eat for lunch today?" she might correctly name the food which had been served; however, just as frequently she would be incorrect in her response.

Sandy referred to herself in the third person with the exception of verbalizations beginning with "I want." While such statements as "Sandy wants to toidy," "Sandy wants a cookie," were prevalent she was often heard saying a series of "wants" using the first person pronoun. These encompassed things to have, eat, do, or see, i.e., "I wanna string," "I wanna pink toy," "I wanna see George," "I wan some ice cream," "I wanna go for a wide," "I wanna go to the beach." There were a sufficient number of such statements as, "I wanna hang my car out," so that her listeners were never quite certain as to precisely what she wanted. Compounding this confusion she would sometimes shriek, "No! No! No! No!" when offered the thing she had asked for.

The major portion of her verbalizations were produced in a monotone with a tendency to use a rising inflection on the last few words. The falling intonation pattern of normal speech was rarely heard even in immediate echolalia. Vast and sudden shifts of volume level reduced the meager communicative value of her verbal output. This was further compounded by the distortion or substitution of "w" for the consonants "r" and "l" and the inconsistent substitution of "s" for the unvoiced "th."

Considerable irrelevant laughter and giggling were a prominent feature of her vocalizations. Her speech pattern was marked by hesitations, repetitions of phrases, and reduplications of single words, as exemplified by the following excerpt taken from a session with an educational therapist. After hearing the therapist read a story about cats, Sandy began, "He's going to see some cats. Ah wan ta go to suh, uh, uh, ah wan ta huh, a wan ta wan ta wan ta toy, Sandy took a Sandy book, it's not a thing a pay. Oh saw, oh my saw, wan ta market."

Despite her rote memory ability, she was unable to count from one to ten without skipping a few numbers, or say more than the first seven letters of the alphabet.

Asocial Behavior

Sandy's distorted communicative ability severely impeded meaningful social interaction. The major portion of her day was spent in self-stimulating activities. She was rarely disengaged from her perpetual twiddling of a string, carrying it with her wherever she went. On those occasions when she ingested her string or had it taken from her, she would become consumed in a quest for its replacement. During these periods she could be heard bombarding her attendants with, "a string, a string," or such echolalic statements as, "The lady will give you a string," "The string is in my pocket." When she was not provided immediately with a substitute she would resort to pulling out shoelaces or ripping threads from fabrics. By using her teeth she managed to shred, tear, or break a host of materials and objects which she would then ingest, afix to her string, or cast into one of her numerous ketches. In every room which she frequented, bits and pieces of the various items she had destroyed could be found beneath beds, couches, dressers, or bathtubs. Because of her destructiveness over the years, fewer and fewer play materials were made available to her; however, despite the barrenness of her environment she managed to retrieve, as needed, seemingly endless quantities of assorted debris from her scattered repositories.

The staff repeatedly called attention to the fact that Sandy was often observed actively masturbating. This was most prevalent when she was wearing pajamas or dresses. While the frequency and the extent of her masturbatory practices could not be assessed, she engaged in the direct manipulation of her genitalia with disinhibition.

An ever-present problem in her management was the persistent phenomena of pica. She was observed gulping strings, shoe laces, chunks of broken plastic toys, whole balloons, sand, and paper. On some occasions she would tear the buttons from her clothing and quickly pop them into her mouth. Because of her constant scratching and digging at bodily sores they became ulcerated and necessitated dressings. Frequently, she would shred these bandages, swallowing them in bits and pieces, or, as in the case of bandaids bolt them in their entirety. She not only ingested the bandages but scabs and purulent materials as well. Similarly with the onset of menstruation, her sanitary napkins were pulled and picked apart in her never ending search for something to twiddle and ultimately eat.

Response to Frustration

The ordinary daily efforts to direct or control Sandy's behavior resulted in frequent displays of rage. Her rage responses began with shrieks and yells of "aaaaaaaaaaaahhhhhhhhhhhh" and "eeeeeeeeeehhhhhhhhhhhh" punctuated by "No! No! No! No!" Unless the precipitating situation was immediately adjusted this would evolve into a disintegrative pattern in which Sandy would forcefully throw herself about, banging her entire body against a chair, wall, or floor. She would vigorously rock, tossing her head backwards crashing it against the wall, and lash out grabbing, scratching, pinching, or biting any child or adult within proximity. During these paroxysmal rages Sandy often bit the back of her hand resulting in an accumulation of scar tissue. At these times she would often wet her pants.

Her extremely low frustration tolerance was repeatedly displayed in the dining room whenever food was restricted, delayed, or denied. This lability was also observed in response to other forms of manipulation. The periodic efforts of the staff to restrict her twiddling behavior by taking her prized string from her provoked cataclysmic eruptions. Because of her size, weight, and the enormity of her rages, attempts to placate her were quickly elicited from the adults in charge of her care. On those occasions when her demands could not be feasibly met, Sandy would perseveratively pursue her wish throughout the day asking everyone with whom she came in contact for the desired object interspersed with rage reactions.

Response to Environmental Change

During Sandy's residency numerous changes occurred in personnel and the physical environment. She had seemingly formed some percepts as to what she could expect in her day to day routine as well as what was expected of her. Without the ability to structure the unfamiliar, Sandy was especially resistive to change, manifesting apparent anxiety whenever her routine was modified.

Response to Children

Sandy's contacts with other children were essentially limited to those moments when she would furtively snatch a toy or food from them. In the yard and playrooms she actively separated herself from other children maintaining as much distance as possible. When she was in the presence of noisy and disruptive children she became readily distressed. She would attempt to shut out the disturbing stimuli by covering her ears. Unless the situation was remediated quickly, Sandy's distress would develop into a rage reaction of major proportions. It was rare that she would direct her aggression against the particular child who was annoying her, but rather she would indiscriminately bite, scratch, or pinch any individual who happened to be near her.

Response to Adults

Sandy avoided proximal contact with adults, recoiling even at the most gentle touch. At the same time she manifest a strong need to maintain visual and auditory contact with adults, remaining peripheral to individuals or groups. Occasionally she would make sorties in which she would approach a person, possibly utter some verbalization, and quickly withdraw. She had a uniquely negative response to adult males, especially strangers. When a man entered a room she would invariably make every effort to hide, often retreating into a bathroom.

Health and Physical Status

It appeared that Sandy was rarely troubled by physical illness. There were remarkably few gastrointestinal upsets in proportion to her enormous and unselected intake.

The ulcerated sores reported prior to her institutionalization persisted as a problem during her residency.

She began to menstruate when she was thirteen years old.

At the age of thirteen years and eight months, just prior to the period of experimental therapy, her height and weight were recorded as sixty-one inches and one hundred and thirty-five pounds. A protein bound iodine test was reported to be within normal limits at that time. A weight gain of twenty pounds was recorded over the following seven months.

Compazine, Deaner, and Thorazine were used over the years in attempts to control her behavior.

Experimental Therapy

If it had not been for Sandy's obesity and habitual slouch she could be described as a very pretty fourteen year old girl.

Her Melanochroid appearance was enhanced by dimples and well-formed teeth. Because of her rapid weight gain her slacks and jeans seldom encompassed her girth, compounding her disheveled look. Her all-pervasive sluggishness and ungainly postures, together with the ever-present twiddling of strings, produced the image of severe atypicality.

Because of Sandy's generalized negative response to males she was assigned to the female clinician.

During the first two months of therapy she received 25 mg. daily of the psychic energizer Deanol (Deaner). This was gradually withdrawn with the introduction of 150 mg. daily of the tranquilizer Chlorpromazine Hydrochloride (Thorazine) which was increased to 225 mg. daily.

First Month (1st through 11th session)

In the initial session Sandy waddled into the therapy room and went directly to the shelf beneath the one-way vision mirror where she began to examine the play materials which had been placed there.

Throughout the session her right hand was almost continuously engaged in twiddling and twirling the string which she had brought with her. When she reached out to grasp toys with her right hand she might momentarily shift the string to her left hand, but at no time did she separate herself from it.

The following account of the first session was representative of the patterns of deviancy in speech and behavior to be seen during the ensuing months of therapy:

(Sandy picks up and begins to squeeze a small rubber squeak toy.)

C: That feels good to squeeze in your hand.

S: I'm a grandfader. I'm a grandfader.

(She continues to squeeze the toy held in her right hand a few inches from her face, viewing it peripherally while her head and shoulders bob forward and back in a rocking motion.)

C: (Questioningly) You think that's the grandfather?

S: Ah wanna cwayon today.

C: (As Sandy's voice is so muffled, the clinician asks) You want a what Sandy? (No response is elicited.)

(Sandy then picks up the father puppet and begins to shake it holding it in the stereotypic manner described.)

C: Sandy can shake the puppets back and forth. (Pause) Sandy is watching herself in the mirror.

S: Ah wanna book. You shake the puppets back and forth.

C: Yes.

S: Sandy's shaking the grandfader.

C: Is that the grandfather puppet?

(Sandy alternately shakes the puppet and bangs it against the shelf in front of the mirror.)

C: Sandy is hitting the puppet. (Sandy continues to bang.) Uh-huh. Yes.

S: Yes. Would you like to shake the two mans together?

(She does not "shake" but continues to bang the puppet against the shelf.)

S: You may put the man back together again. Boom. (Banging the puppet.)

C: It feels good to shake the puppets.

S: It shakes good to shake the doll. (Pause) To shake the doll tonight.

(Replacing the father puppet, Sandy picks up the baby puppet and begins to shake it.)

C: Sandy's shaking the baby puppet.

S: (Pause) Sandy's shaking the baby puppet. That's a good idea. (With distinct melody pattern she sings) That-is-

(She replaces the baby puppet and continues to twirl her string, bobbing her head back and forward.)

C: It feels good to twirl your string.

S: (As she picks up the rubber squeak toy, she says) Ah wanna feed the dowee. Ah wanna feed the dowee.

C: Sandy wants to feed the dolly?

S: To feed the dowee. (Echolalically approximating the inflectional pattern of the clinician.)

C: Uh-huh.

(Sandy replaces the squeak toy and picks up the nursing bottle filled with water. She holds the neck between the thumb and index finger of her right hand and by rotating her wrist jiggles the bottle. In this way her free fingers are tapped against the side of the bottle.)

S: Ah wanna bottle.

C: Sandy's tapping on the bottle.

(Then, she begins to pull the nipple from the cap, seemingly not recognizing that the cap can be unscrewed.)

C: Sandy wants to pull the nipple off.

(Having succeeded, she quickly gulps the entire contents of the bottle.)

C: Sandy's drinking from the bottle. (Pause) Sandy was thirsty. (Pause) She drank all of the bottle.

S: She drank all the doddles. Good for Sandy. (Pause) Tsssssssssssssssss. Ah wanna book. Ah wanna book. Ah wanna book.

C: I don't have a book here today Sandy. We have the other toys. If you want to play with them you may.

S: You bwoke the bottle today. SSsssssssssssss..........

(Sandy continues to jiggle the empty nursing bottle, then drops it on the table and resumes twiddling her string.)

S: Ah wanna do ahhhhhhh Ah wanna do the pigs.

C: (Feeling that Sandy is referring to a set of wooden farm animals on the table, the clinician says) Sandy wants to look at the animals?

S: YYYYYYYYYook at the pigs. (She stands with her back to the table, twiddling her string, and does not appear to be looking at the animals.)

C: Uh-huh.

(Still not directing her gaze at the wooden figures she picks up the horse)

S: Itsa deer tsa deer yook at the ducks......(unintelligible mutterings follow)

C: Sandy likes looking at the animals.

(She picks up and drops each of the farm animals.)

S: Would you like to yook better than the swan the aminal weshque yeague. We yooked all the dogsday. Sandy's wooking at the dear duck. The aminal weshque weague. Sandy ah wanna.

(Still holding her string, she again picks up the rubber squeak toy and sits on the bench at the table.)

C: That feels good in your hand.

S: Tsssssssssssssss. Why d'ya take the pigs apart why. That's the bough. The aminal weshque yeague.

C: (Uncertainly) The animal rescue league?

S: You see the pigs there. (Twiddling her string)

C: It feels good to twirl your string.

(Sandy gets up from the bench and shuffles across the room to the toy closet. She holds the rubber squeak toy between the little finger and the palm of her right hand, simultaneously twiddling her string with the index finger and thumb of the same hand. Upon reaching the closet door she transfers the string and toy to her left hand and with her gaze fixed on the string she reaches up with the right hand and flicks the padlock on the door.)

S: Ah wan Bambi.

C: You want Bambi?

S: Ah wan Bambi. Ah wan Bambi.

C: There aren't any books in the closet. I know you'd like to go and look in there but the closet is locked.

S: Ah wanna dowee. (Leaning against the closet door, twiddling her string)

C: There's no dolly in the closet. There are these things that are here in the room.

S: Ahhhhhhhhhh may get you a book in the room.

C: I don't have anything else to get you. The things are all here in the room.

S: Ah wanna book. Ah wanna book. Ah wanna get a book in the room.

C: There isn't any book........

S: (Screaming) Noooooooooooo!

C: I know you want a book very badly.

S: (Screaming) Eeeeee-------hhhhhhhhhhhhhh!

(In the months to follow it was found that this was her expression of minimal distress.)

C: I know that. I know you want a book very badly.

S: Ah wan Bambi. (Still leaning against the closet door.)

C: Is Bambi a book?

S: Is Bambi a book? Ah wanna......(trails off unintelligibly.)

C: It feels good to squeeze that in your hand.

S: Ahhhhhh Wouldga like to see Nancy.

(She is momentarily silent. Then, each of the following words are said at a distinctly different pitch with definite pauses between each.)

S: San-dy-yook-at-the-four. (Pause) Ah wanna see Nancy.

(She moves a few steps away from the toy closet door to lean on the puncho toy.)

C: That feels good to rest your arm on BoBo.

S: Ah wan some gum. Ah wan some gum.

C: I don't have any gum here, Sandy.

(Sandy moves to the table. Clutching her string and the rubber squeak toy she picks up the boy puppet, shakes it, and replaces it on the table.)

S: That was good, Sandy. That was very good. Boom. (Pause) Ah wan some candy. Sandy (pause) Ahhhhhh wanna pway the gwaphaphone.

C: You want a lot of things, don't you.

S: (Screaming) No! No! No! Ah wanna see Nancy. Ah wanna see Nancy. Eeeeeeeeeeeehhhhhhhhhhhhhh. Ah wanna book. Ah wanna book.

C: I don't have a book.

S: (As she picks up the cap of the nursing bottle and pulls out the nipple) You bwoke it off the bottle.

C: You took the nipple apart.

S: Ah wanna book. Ah wan Bambi.

C: I don't have Bambi. We have the things that are here in the room. We can play with them if you'd like to.

S: Nooooooooooooo! Ahhhhhh wanna read a book tonight.

C: You really want to read a book you think.

S: Ah wan some gum in my pocket book. (Pause) Ah wan some eeeeeehhhhhhhhhh. Ah wanna seeeeeeeeeeeeee. (Pause) Ah wanna book. Ah wanna book. I don't have a book tonight.

(Walking over to the mirror, she picks up the mother puppet from the shelf and shakes it.)

S: Ah wanna seegrandmuder. (Pause. Then, as she replaces the puppet on the shelf) Put the girl back. Sank you. Sank you Sandy. Sank you Sandy too. (Pause) Ah wanna see Nancy. Ah wanna jelly bean.

C: There are a great many things that you want.

(Sandy stands with her back to the mirror and with her eyes focused on her twiddling string she appears to be viewing the room with peripheral vision by rotating her body.)

C: You are looking around the room.

S: Ah wanna sit on the four. Ah wanna sit on the four.

C: Sandy wants to sit on the floor? (Pause) You want me to tell you if it's all right if you sit on the floor?

S: Sit on the four. Ah wan the hunter. Ah wanna ah wanna see Johnny. (Pause) Sandy is a.........(trails off unintelligibly.)

(She does not sit but remains standing, twiddling her string.)

C: Sandy is able to twirl the string between her fingers.

S: (Loudly) Nooooooooo! Noooooooooo! Ah wanna puppet. Sandy frowed it on the four.

(Nothing has been thrown to the floor. Sandy begins to alternately shake and bite the boy puppet.)

C: Sandy's biting the puppet.

(She replaces the puppet and continues twiddling her string.)

C: Sandy can twirl the string very fast between her fingers. It must feel very good.

S: (Picking up the wooden lamb) Ah wanna pig. Ah wan my own........(trails off unintelligibly.)

C: Sandy has a lamb.

S: Sandy put the lamb back. (She places the lamb on the table.)

C: Uh-huh.

S: Ah wanna milk it. You may have that. (With a vague gesture she profers her hand containing both the string and the squeak toy.)

C: You'd like me to take that?

S: Ah wanna teddy bear. Sandy bwoke the bottle.

C: Sandy thinks she broke the bottle? (Pause) Would you like to put it back together again?

S: Together again.

C: Uh-huh. (Reaching for the bottle, the cap, and the nipple) Let's see. Where's the other piece? Oh, it's this piece.

S: Oh ah wanna key.

C: (Inserting the nipple in the cap and screwing it back on the bottle) There we are!

S: Sandy's putting the nipple on the bottle. Sandy saw the bottle too. Sandy saw the bottle too.

C: There are a lot of things to see in this room, aren't there?

S: To put the. We'll put that puzzle back together again. Sank you. Pssssssssssssss Boom! (She picks up the pacifier and jiggles it in her right hand) You're a good girl. Boom. Sssssssssssssssssssss.

C: Sandy can make a noise. A Sssssssss noise.

S: Ah wan ssssssss Ah wan some ice cream. Ah wan some ice cream. (She bites and pulls at the rubber squeak toy.)

C: Sandy is trying to pull the toy apart.

S: Ah wanna book?

C: Sandy says she wants a book. (Pause.) It feels good to squeeze the toy in your hand.

S: Ah wanna see the grandfader. Ah wanna see Nancy.

(She continues to bite, squeeze, and bang the rubber squeak toy.)

C: Sandy's biting the toy.

S: Sandy's biiiiiiiiii Ah wanna put it on the bottle. Ah wanna put it on the bottle. Go ahead.

C: Uh-huh. (Pause) Sandy wants me to tell her that she can go ahead and put it on the bottle.

(Sandy attempts to force the ring of the pacifier into the neck of the nursing bottle. She finally resorts to placing the nipple in the neck.)

S: Sandy's putting it........(trails off unintelligibly.)

C: Sandy put the nipple in the bottle.

S: Sank you. Sank you vewy much. Ah wanna put it in the bottle. Ah wanna put it in the bottle.

(For the next few minutes Sandy is silent as she continues to twirl her string. Her next comment is typically unrelated to her behavior.)

S: Sandy's making a face today. (Pause) Ah wanna see the grandfader. Ah wanna see the grandfader. (She picks up the boy puppet and taps it against her right cheek.) Ah wanna see Nancy.

C: It feels good to pat the boy puppet and to shake it.

S: (Shaking the puppet) Put the puppet back. Sandy's shaking..........(fades off) It feels good to (pause) Boom!

(She transfers her string to her left hand and twirls it as she picks up the mother puppet.)

S: Sandy's shaking her dress. Sandy's shaking her dress.

(She simultaneously shakes the puppet with one hand and twiddles her string with the other.)

C: It feels good to have the string in your hand and wiggle it.

S: Put the puppets away. Boom. Sssssssssssssss. (Unintelligible muttering) You may tie the toy on the string. (Picking up the mother puppet) Sandy's ummmmmm Sandy's shaking her dress. Sandy's shaking her dress. Sandy's shaking her dress.

C: Yes. Sandy is shaking the mother puppet.

(Each time that Sandy hits the puppet against the shelf she says, "Boom." She continues to tap her right cheek with each puppet.)

C: The mother puppet is hitting Sandy in the face.

S: (Replacing the mother puppet she picks up the father) Ah wanna shake the man today. Ah wanna shake the man today.

C: Sandy's hitting the father puppet. Sandy's making the father puppet hit her face.

S: Put the man puppet away. Sank you. Boom. (She replaces the father and picks up the baby.) Sandy's shaking the boy's overalls today.

C: Sandy's shaking the baby puppet. It feels good to shake him like that.

S: Boom!

C: And to hit him like that.

S: You shake the baby puppet today. Boom. (She exchanges the baby for the girl.) Sandy's shaking her dress. Sandy's shaking her dress.

C: Sandy is shaking the girl puppet.

S: Ah wanna see Nancy. Boom.

C: Sandy's hitting her face with the puppet.

S: Boom. Put the puppet away. Sank you.

C: Sandy is watching herself in the mirror.

S: Sandy's shaking ahhhh Sandy's shaking it today.

C: Sandy is hitting it hard.

S: Boom!

C: It feels good to hit the puppets.

S: You put the puppet away sank you.

(Sandy continues to pick up the different family members, shaking them, banging them against the shelf, and replacing them. Her verbalizations refer to shaking items of clothing rather than the familial identity of the puppets.)

The termination of the session was marked by Sandy's resistance to leaving without taking something with her. The ensuing rage reaction was typical of the rapidity with which she shifted from a maximal expression of distress to verbalizations delivered in her characteristic way.

C: Our time is up Sandy but these things will be here the next time you come and you can play more with them if you'd like to then. (Extending her hand towards Sandy, the clinician says) Now, I am going to ask you to leave this.......

S: (Screaming) Noooooo! Noooooooo! Noooooooooo! Ah wanna toy.

C: Well we can't take anything away........

S: Ah wanna toy to read a book tomorrow.

C: (Referring to her string) You can take that with you. You brought it.

S: No! No! No!

C: I know that you are angry. I know you'd like to take that with you but we can't take it out of the room.

S: Nooooooooo! Ah wanna organ. Ah wanna organ.

C: I know you are angry.

S: Ah wanna toy. Noooooooooo! Eeeeeeeehhhhhhhhh! (She grabs for a puppet.)

C: No we can't take that either.

S: (Screaming and biting her hand) Eeeeeeeeehhhhhhhhhhh!

C: I know that you are very angry.

S: Eeeeeeehhhhhhh Eeeeeeeehhhhhhhhh Nooooooooooo Eeeeeehhhhh

C: You may take your string. Come.

S: Ah wanna toy. Ah wanna toy.

C: These things will be here the next time you come and you can play with them then.

S: (Grabbing the rubber squeak toy) Eeeeeeehhhhhhh Eeeeeee hhhhhhhhh.

C: No we can't take that either. I'm sorry.

S: Ah wanna ah wanna ah wanna puppet.

C: I know you want to take it but we can't Sandy.

S: Noooooooo! Ah wanna mudder ah wanna mudder. Noooooooo! Noooooooo! Nooooooooo! She will give you a toy. Eeeeee eeehhhhhhhhh! Eeeeeeeehhhhhhhh!

C: They'll be here the next time you come. You can play with them here. This is your room. No, I'm sorry.

S: Noooooooo! Nooooooooo! Nooooooooo! Eeeeeeeehhhhhhh! (Throwing herself on the floor)

C: I know that you are angry and upset but we just can't take the toys out of the room Sandy. We have to leave them here.

S: Eeeeeehhhhhhhh. Ah wanna organ. (As she howls she begins to bang the back of her head against the wall.)

C: No, I can't let you do that. (The clinician joins her on the floor protectively placing her hands between Sandy's head and the wall. Sandy reaches out clutching the clinician and continues to rock and scream.)

C: No, I can't let you bang your head.

S: Eeeeeeehhhhhhhh! (Sandy urinates on the floor)

C: You can come another day and play with the toys. Come. Let's take your string and go downstairs. (Slowly the clinician helps Sandy to her feet and they leave the room together.)

(By the time they reach the foot of the stairs Sandy behaves as if her distress had never existed.)

Sandy continued to have difficulty in accepting the limits at the close of most sessions. Manifestations of her distress slowly diminished over the month. In the midst of her departure she would perhaps throw a toy to the floor or kick BoBo. Another delaying tactic was her request, "Sandy wants to toidy."

As seen in the first session a significant portion of Sandy's behavior was centered upon strings. It was fairly typical for her to arrive with a string which had been multiply knotted and to which was fastened such objects as bobby pins, clothes pins, empty spools of thread, and fragments of a variety of materials. Frequently one of these items would fall off in the process of her twiddling and twirling of the string or while gnawing and chewing both the saliva-sodden string and the afixed objects. It was observed that she was able to tie overhand knots by holding the end of the string between her teeth but that she was rarely able to fasten any of her "twiddlers" onto the string. At such times she would say, "The lady will tie it on." By using her teeth she was able to loosen knots. Oftentimes when she was in the midst of manipulating her string she would be heard saying, "Sandy wants a string, a string, a string."

Early in therapy it was discovered that even the most innocuous comments made by the clinician in reference to her string elicited a distress response. It seemed as if she disregarded the content of the clinician's statements, only associating the word "string" with the singularly threatening meaning of having it taken from her.

In the first week of therapy a typical pattern of behavior was demonstrated as Sandy made repeated trips into the bathroom where she would recapture a scrap of some toy from behind the bathtub. As the therapy suite had been previously used as a play area in which Sandy had spent considerable time many months prior to therapy, she had accumulated an assortment of twiddlers in this ketch behind the bathtub. The clinician could not help but be amazed at her seemingly inexhaustible supply as she would plunk herself on the bathroom floor and with much twisting, squirming, and stretching, reach into the far recesses underneath the bathtub, each time extricating one more scrap from her hoard. By the end of the month, through a natural process of attrition, her storehouse was emptied as some of the reclaimed objects were ingested while others were afixed to her string and taken from the therapy room. She then proceeded to indiscriminately replenish her supply from the available therapy materials, making several sorties during any one session depositing and retrieving objects.

The play materials used in therapy had to be carefully selected in an effort to control her ingestion of nonfood items. Sandy did not provide any anticipatory cues prior to popping some inedible object into her mouth. Because of the speed with which she forcefully swallowed these objects it was not always possible for the clinician, despite her alacrity, to retrieve them. Frequently Sandy would say, "That is not to eat," immediately preceding her ingestion of an object; however, her utterance of this statement was inconsistent and often totally irrelevant to her behavior. Even when the play materials were limited to the most sturdy toys she managed to bite, gnaw, or shred them into gulp-sized pieces. She would utter a number of negative statements in association with either breaking or taking apart objects, seemingly unable to discriminate between the two acts. Thus, as she took apart toys which were intended to be used in that manner she would be heard saying, "Sandy bwoke the toy. Sandy's a bad girl. Sandy will be punished."

Throughout this month Sandy exhibited a continuing interest in the family of hand puppets. In the second session she shook the boy puppet and in an exact reiteration of the clinician's statement made during the initial session, said, "It feels good to shake the puppet." Without any stimulation from the clinician she began to regularly incorporate the hand puppets in water play saying, "Sandy wants to give the mudder a bath." After many restatements of her request and repeated affirmative responses from the clinician she would pull herself to her feet and in a shuffling, waddling gait enter the bathroom. She would plop the puppet into the sink, turn on the faucet, and while the water splashed over the puppet she would twiddle her string, rocking back and forth. She would bob her head closer and closer to the medicine cabinet mirror, seemingly attracted by the reflection of her moving image but never actually banging her head against the glass. This was all accompanied by prolonged phonations of "aaaaaaahhhhh eeeeeeeeeehhhhhhhhhh ssssssssssssssssss." Each time that she returned to the therapy room with a dripping wet puppet it would be carefully replaced in the original erect position in which she had found it. The entire performance would be repeated many times using the different family members, each time going through the ritual of making multiple requests. Whenever she undertook this activity her naming of the puppets was fraught with inconsistencies. She might be holding the mother puppet and request, "Sandy wants to give the baby a bath," and while pouring water over the puppet change its identity again saying, "Sandy's giving the man a bath." Her play with the hand puppets remained stereotyped and primitive, lacking in details and organization, never developing any themes beyond the crudely performed "bath."

Another example of her play which had the quality of animating the inanimate occurred with a family group of rubber figurines. On one occasion she made crude feeding gestures by inserting the mother figure's head into the neck of the nursing bottle. During the same session she incorporated some bean bags in her play pretending they were pillows, saying, "Sandy's waying the mudder on the piwwow."

An impoverishment of the representational use of play materials was especially noted in her infantile use of crayons. Occasionally she would indicate her recognition of their presence by saying repeatedly, "Sandy wants ta cwayon"; however, she would not follow through until the clinician completely structured the situation by seating her at the table, placing the paper before her, and handing her a crayon. Ultimately, she would commence to color but invariably she would continue to produce irrelevant verbalizations, possibly break and eat some of the crayon, and of course twiddle her string. The crayon was held in a palmar grasp and moved across the paper in a linear scrubbing motion. From time to time she would tap the crayon on the paper with a definiteness of purpose suggesting that her dots were part of some overall plan, but none was forthcoming. When flecks of crayon broke loose from the accumulation of built up wax on the surface of the paper, she would become engrossed in meticulously picking them up on her fingertips. Once having initiated coloring she would continue until the major portion of the paper was solidly covered, often turning it over to begin again. It was remarkable that she was able to stay resonably well within the boundaries of the paper as the entire activity was performed with the exclusive use of peripheral vision. When her strokes contacted the table surface she often would comment, "It's not to cwayon on." Other verbalizations associated with coloring activities were: "Sandy's making a picture for mummy and daddy," "And then we will hang it up," "We will hang the picture on the wall." Whenever the clinician asked, "What are you drawing?" her sole response was, "A picture." If pressed with, "A picture of what?" she would either fail to respond or echolalically repeat the inquiry. The regularity of her erroneous naming of colors and the primitiveness of her productions suggested gross perceptual or cognitive deficiency.

Several sessions during this month were devoted to Sandy's longstanding but unresolved problem of picking and digging at her sores. She would arrive for therapy with a purulent and bloody discharge oozing from numerous ulcerated sores on her legs and arms. Despite the repeated imposition of verbal limits, she would periodically dig her nails into the infected areas so that her fingers became covered with blood and pussy materials. Accordingly, some sessions were consumed with treating and bandaging her wounds; however, the futility of these efforts was realized as, within the hour, she would be seen in the milieu of the institution without the bandages, undoubtedly having ingested them. This problem persisted as she was actually seen popping bandaids and two by two gauze dressings into her mouth and, with one mighty gulp, swallowing them in their entirety.

On two occasions during this month Sandy displayed acute distress in response to loud auditory stimuli. A fire drill occurred in the midst of one session. The clang of the institution's fire alarm precipitated a state of panic in Sandy. She became immobilized, threw herself to the floor, covered her ears, and began to scream. Only with the aid of another staff member was it possible for the clinician to get Sandy to her feet. Her inability to tolerate the noise became patently manifest as it was necessary to pass directly beneath the ringing alarm. With the clinician leading and an assistant pushing, the hallway was finally traversed with Sandy screaming and covering her eyes and ears against the impinging stimuli as she cowered and clung to the wall farthest from the bell.

Another episode occurred during a session in which the prolonged but distant screaming of another child elicited an unrealistic and disproportionate response. To the clinician, this sound was part of the normal background noises; however, Sandy became overtly distressed as she focused on this extraneous stimuli. She began to rock, covering her ears with her hands and closing her eyes in a painful grimace. As she sat wincing and emitting a whining, distressful vocalization, the clinician asked, "Who is that screaming?" Sandy replied correctly identifying the child. When questioned further as to why he might be crying she replied, "He's getting a spanking."

By the end of the month certain features of Sandy's verbalizations had occurred with sufficient frequency making it possible to describe some of her characteristic patterns. Her most frequent verbalizations continued to be expressions of "wants." These usually took the form of, "Sandy wants," or, "I want," and centered upon things to have, eat, see, and do. On close observation it was found that the concept of "want" was often confused with "see" or "have." The most striking example of this phenomenom occurred as she would sit twiddling her string and be heard to say, "I want a string." She would emit a series of "I wants" in response to things that she saw within the therapy room. In these instances the clinician encouraged her to pursue the presumably desired object; however, Sandy seldom followed through. On those occasions when she was actually provided with the object she would continue unabatedly restating her request. It was as if this was a memory exercise in naming and labelling in which she was recreating earlier training experiences.

As in the initial session when she took such delight in reiterating the phrase, "the animal rescue league," this pattern of centering upon a seeming irrelevancy occurred periodically. Interspersed throughout a session such meaningless delayed echolalic phrases as, "Marion cooked the darndest carrots," or, "Eva cooked the dinner and went straight to bed," would frequently be heard accompanied by giggles and laughter. When questioned as to Eva or Marion's identity, Sandy would answer, "A lady," or, "Your sister."

Another cluster of verbalizations could be categorized as descriptions of what she saw occurring about her. Triggered by the visual stimuli she would report, "The lady is doing her work," upon seeing the secretary typing. Further examples of verbalizations in response to situational stimuli were: "The man is washing the floor," "The lady put it in her pocket," and "The ball is on the floor."

In addition to "reporting" about what she saw going on in her immediate environment, she also verbally recreated a series of adults' statements involving directions, praise, or prohibitions which were associated with a particular performance. As she disassembled a toy she would say, "Sandy bwoke the toy. The toy is not to bweak. Sandy's a bad bad girl. Sandy wants a spanking." Upon replacing a toy on the shelf or table she would say, "Put the dowee away. Sank you Sandy. Sank you vewy much. That's a good girl."

The time concepts of today, tonight, tomorrow, and yesterday were readily and freely interchanged in a random manner. These time words were tacked on to the ends of sentences often adding to their agrammatic character. An example of this was seen in such statements as, "Sandy's giving the dowee a bath tonight," or, "And then we'll go to the beach yesterday."

As in other dimensions of her milieu Sandy's deviancies in speech production reduced the intelligibility of her verbal output. Inappropriate volume levels and inconsistent rhythm patterns combined to give many of her verbal productions a characteristic mumbling quality. In addition, particular words were spoken in such a way that they were often unrecognizable. This was not only the product of distortions, substitutions, and omissions of phonemes but the complete jumbling of phonemes into manufactured words.

Second Month (12th through 23rd session)

Subtle changes in the quality of the child therapist relationship became perceptible during this period. Unlike Sandy's usual pattern of maintaining distance between herself and others, a gradual metamorphosis from complete avoidance to active seeking of physical contact occurred. In marked contrast to her shrinking and withdrawing from even accidental contact, she became increasingly tolerant of the clinician's proximity which eventuated in overt displays of affection. She would fixate her eyes upon the clinician in an unseeing stare, rock forward and back, each time closing the distance between them until she pressed her cheek or brushed her lips against the clinician's cheek. This was usually accompanied by the placement of her hand on some part of the clinician's body. It seemed that such behavior had been furthered by the clinician's growing sensitivity to those actions which Sandy uniquely perceived as threatening. It was recognized that she had come to depend primarily upon nonverbal cues as indicative of positive or negative expressions of adults' affect. It gradually became evident that sudden movements, rapid shifts in volume level, or minimal facial expressions of negative affect could provoke a distress or terror response. Every effort was made to maintain an atmosphere free from excessive auditory or visual stimulation. It was felt that the therapy room itself contributed to her feeling of comfort as it remained uncluttered and essentially unchanged from session to session. In this atmosphere Sandy came to trust the clinician. This was poignantly demonstrated in her attitude with regard to her string. During the early sessions of therapy she responded with great apprehension when any verbal reference was made to her string; however, at this time she had come to feel secure enough in the therapy situation to offer her string to the clinician, saying, "The lady will hold your string." In an effort to foster this confidence the clinician was careful to keep the string in full view and return it immediately upon request. In the following months such interaction culminated in Sandy's sporadic use of the clinician as a repository for her string.

Depending upon the attitude of the particular attendant caring for Sandy, periodically she came to therapy without her string. On these occasions her behavior was extremely fragmented, degenerating into a frantic effort to obtain a string. She would throw herself to the floor seemingly unable to engage even in minimal contact with the play media. Throughout the constantly shifting content of her verbal output she would repeatedly return to a series of verbalizations about strings, such as, "She took the string away," "Sandy wants a string," "The lady will give you a string," "Gussie has the string in her pocket." Each of these expressions would be punctuated by the screams, howls, and head banging of a full blown rage reaction.

Sandy's use of the play media remained essentially unchanged. Her interests continued to be mainly focused on the bathing of the hand puppets and crayoning. As her play patterns had become perseverative and repetitive, the clinician attempted to engage more actively by introducing other ways of using the play materials. In the case of the puppets the clinician offered her a towel suggesting that she might dry the puppets after their bath. She readily accepted this intervention in her play, crudely imitating the clinician's model by touching the puppet to the towel. Although the visual model was repeatedly presented over a period of months, Sandy's concept of drying the puppets was restricted to simply bringing the towel and a puppet together in momentary contact, without actually wiping or rubbing. As with other motor activities she executed these movements as if she were somnambulant.

When the clinician introduced the animation potential of the hand puppets by placing one on her hand, Sandy spontaneously picked up another puppet from the table, pulling it over her hand using her teeth as a child would in putting on a mitten. The clinician felt that a differentiated response might be evoked to the inanimate figure of the hand puppet; however, when the clinician began to speak in an assumed voice Sandy withdrew apprehensively. After several attempts it became clear that she could not accept the unreal and abstract nature of such an activity.

Through crayoning activities, numerous opportunities were afforded to identify problem areas in her language, perception, and motor performance. Many attempts were made to have her copy simple geometric forms. When the clinician would present a circle or a square and ask her to copy them she responded as if she had no comprehension of the task, producing only her typical linear scrubbing strokes. In an attempt to discern whether her substitute response was the product of a lack of comprehension of the verbal directions the clinician presented the task in pantomime. Over a period of months in which the manner of presentation was varied it was found that Sandy, while willing to perform, experienced profound disturbances in eye hand coordination and spatial relationships.

She was unable to identify her printed name; however she seemed to have been conditioned to the auditory stimulus, responding correctly when the letters of her name were spelled out.

A modified attempt to have her draw a person was introduced by presenting an outline of a head in the hope that she might be able to fill in the facial parts. She was unable to perform this task whenever it was presented throughout the course of therapy.

During such activities, the clinician made frequent inquiries of Sandy regarding the naming and labelling of objects with the intention of assessing her expressive symbolic ability. If she were asked to name facial parts she was able to evoke eye, ear, nose, mouth, eyebrow, hair, etc.; however, she would rarely associate the correct name with the appropriate part. If asked to name colors while crayoning, her responses were limited to green and black. It was of interest to note that her first response was invariably green. Marked uncertainty was prevalent in all of her naming activities as seen in her inconsistent and perseverative responses. The looseness with which she held rudimentary symbolism was especially manifest if the clinician attempted to verify her perception by restating the question. At such times she would change her response, frequently whispering it. It seemed as if she perceived the clinician's rechecking as indicative of an erroneous response.

In all of her naming activities she consistently showed the capacity to maintain the correct categorical set. For example, when asked what she had eaten for lunch that day she would be certain to provide the name of a food; however, it was rarely what had actually been served. Similarly, the clinician often inquired as to the name of the attendant caring for her that day. This would invariably elicit the name of a person, but seldom the appropriate name. In her naming of people she was able to differentiate between male and female. It was interesting to note that while she had a marked aversion for men, she frequently alluded to them by name. This was observed when she might spontaneously say, "I wanna see the man." When questioned by the clinician, "What man?" she might variously reply, "Eddie Fisher," "Arthur Godfrey," "President Kennedy," or the names of any of the males within her environment. The same type of unique response was elicited with regard to women. When she asked for a person, saying, "I wanna see Mary," the clinician could stimulate a surname by questioning, "Mary who?" While Sandy's answer was categorically correct she regularly became confused in relating the appropriate surname to the Christian name. Through such verbal exchanges the clinician came to recognize that Sandy was able to respond to a sequence of specifically structured questions so that the end product appeared to be conversational. The following were examples of the actual exchanges in which Sandy appeared to be using responsive speech:

S: I wanna see Arfur.

C: Arthur who?

S: Arfur Godfwey.

C: What does Arthur do?

S: Works.

C: Where does he live?

S: (Here she would name the community in which the institution was located.)

S: I wanna spoon.

C: What would you do with a spoon?

S: Cook it.

S: I wanna basket.

C: What would you do with a basket?

S: Put candy in the basket.

C: Then what would you do?

S: Eat it.

C: What is it doing outside today?

S: It's raining. (This was a singular response regardless of the weather conditions.)

C: What are you drawing?

S: A picture.

C: A picture of what?

S: A farm house.

C: Who lives in the farm house?

S: Mike Mike rowing a boat.

C: Oh, there must be a lake there. Who else lives in the house?

S: Mummy.

C: Who else?

S: Farm aminals.

Her response in this last "conversation" seemed to emanate from a story about a farm which had been frequently read to her.

A major portion of many sessions was spent "just talking." By asking Sandy a variety of questions the clinician had begun to acquire an awareness of the content and the necessary structural form that inquiries had to assume in order to gain a response. It was found that regardless of Sandy's mood or the nature of the activity she was engaged in she was always ready to respond as long as the stimulus was one with which she was familiar. Under these circumstances nondirective comments and reflections of feeling were contraindicated as Sandy was unable to utilize them because of their abstractness.

Although a sense of relatedness was developing, Sandy's behavior as initially described remained essentially unchanged. Her ever-present knotted string afforded further opportunity to assess her cognitive functioning. By asking her to count the number of knots in her string it was discovered that she was unable to count serially. Her response was typical of a preschool child who had no concept of numbers and was in the process of learning to count. She would say, "One, two, fwee, five, seven." At no time was she able to respond to the question, "How many?"

Third Month (24th through 34th session)

Early in this month Sandy experienced a variety of problems within the institutional milieu which were reflected in her behavior during therapy. A drug change was instituted in which Deaner was withdrawn and, after a period of approximately two weeks, Thorazine introduced. Her attendants varied from day to day; some exerting an effort to restrict her string-twiddling behavior by eliminating the source of supply, while others provided her with an unlimited supply.

During this period Sandy's behavioral problems became intensified. Sleep disturbances created an especially difficult problem in management. During the night she would repeatedly leave her bed, wander in and out of the bathroom, tear her bedclothes, scream, urinate indiscriminately and masturbate freely.

A marked increase was noted in her biting and scratching attacks upon both children and adults. Frequent ripping and tearing of her clothing occurred as she attempted to yank and pull bottons from all of her garments. In an attempt to prevent this, the practice of putting her blouses on backwards was instituted.

The majority of the sessions during this month were consumed in efforts to quiet and calm her. She would arrive in a highly agitated state, screaming and screeching, and throw herself to the floor, often in a corner where she would remain for the bulk of the session. The minimal self-initiated activity which she had previously engaged in was now almost nonexistent. She abandoned her ketch and although she verbalized about wanting to wash the puppets or crayon, she did not follow through.

In contrast to her usual pattern of independently utilizing the toilet facilities she would urinate on the floor and remain there, seemingly unperturbed about sitting in a pool of urine. Many of her verbalizations centered about wetting herself; however, there was a generalized absence of any relationship between her statements and actions. Sometimes she would say, "Sandy wet her pants," but upon checking the clinician would find this not to be the case. At other times she might say, "Sandy wants to wet her pants," or, "Sandy wants to toidy"; however, she would neither wet her pants nor get up to toilet. On those occasions when she actually wet her pants, sufficient time had elapsed between word and deed to make her verbalization irrelevant. Faced with the practical reality that the wet, slippery linoleum presented a potential hazard, the clinician would casually try to contain the rivulets of urine. Sandy readily, but ineffectively, participated in these sponging up operations.

During this period of extreme distress and disintegration, the thread of the relationship was maintained at the verbal level. The verbal exchanges and the general atmosphere of acceptance and quiet within the therapy room combined to slowly ameliorate some of Sandy's distress. A gradual diminution would occur in her volatile and intensely labile expression of affect so that by the end of the session a relative state of calm was achieved.

The following excerpt from the thirtieth session exemplified Sandy's deluge of verbal irrelevancies and flights of ideas and the clinician's efforts to provide her with reality oriented responses:

(Sandy sits on the bench, her back against the wall. She gazes intently at the clinician who offers her a small red rubber ball.)

S: Ah wanna quart of milk. Ah wanna ah wanna spoon. A book. The lady has it in her hand. The ball. O.K. Exports wish Sandy frowed it in the four Sandy frowed it it on

C: You have two balls now, don't you? You have two balls.

S: Sssssssssssssshhhhhhhhhh. Ah wanna bobby pin. Ah wanna take a bath.

C: Take a bath? Where do you take a bath Sandy?

S: At night.

C: Yes, you take a bath at night. Where?

S: In the bathtub.

C: That's right.

S: That's what ah wanned today.

C: That's what you are going to do tonight? Good. Do you like to take baths?

S: O.K?

C: Do you like it?

S: O.K? Ah wan Mrs. Snow's shoe stwing. (Laughter)

C: What happened to your shoe string?

S: You bwoke it?

C: It broke.

S: Expurts wish their coffee bwack.

C: Experts wish their coffee black? That's something that you must have heard on the radio. What kind of coffee were they talking about?

S: Tetwey tea.

C: What do you have to drink?

S: Milk.

C: Milk? Do you drink coffee?

S: O.K?

C: Do you drink coffee Sandy? (No response) Do you drink coffee?

S: At night. (It was later established that she consistently refused milk; her only beverage being water and soft drinks.)

As in the foregoing, it became increasingly self-evident that Sandy's expressive language was indicative of an impoverishment of concept formation. The looseness with which she held concepts was poignantly demonstrated in a session when the clinician was manipulating clay in the hope of stimulating her interest. Various clay forms were made for her and she was asked to name them. Through some remote associational process Sandy seemed to perceive the clay forms as pictures, saying, "The lady will put the picture hang the picture on the wall."

On one occasion when Sandy asked for a book the clinician took the opportunity to offer the substitute activity of looking at picture cards. While leafing through the collection of pictures of common objects, Sandy spontaneously began to name them. Her crude associative responses were recorded as follows:

Picture	Sandy's Response
belt	watch
glass	cup
couch	bed
apple	grape, then peach
money	book
tree	house
hand	fingernail
toilet	tub
sink	bathtub
kitchen	house
open faucet	water is taking a bath

Fourth Month (35th through 44th session)

Observable changes in Sandy's behavior were noted after the introduction of the new medication, Thorazine. While the basic pattern of inconsistency and deviancy persisted, the frequency of her explosive outbursts diminished and were surplanted by an all-pervasive lethargy. On several occasions it was necessary to awaken her for her midafternoon session. In therapy she was frequently so drowsy that she would lie on the floor, yawning and nodding, in what appeared to be a struggle to stay awake. When she sat on the bench alongside the clinician she would cuddle, slinging her leg over the clinician's thigh and resting her head on the clinician's shoulder.

It was reported that her active masturbation and indiscriminate urination continued unabated. Her day to day experiences in the milieu of the institution revealed themselves through her delayed echolalia. She would make such statements as, "Don't do that or you'll wet your bed!" "You can't have any more water." "You're a bad girl for wetting your pants!" Such difficulties were not encountered in the therapy situation. Unlike the previous month she now used the toilet directly following her request. The only semblance of masturbatory activity seen during the entire course of therapy was the brief manipulation of her genitals when wiping herself after toileting. There was an increase in the frequency of her sorties to the bathroom for drinks of water seemingly, in part, a consequence of her attendants' restriction of her fluid intake.

In the early part of this month she returned to her interest in bathing the puppets and crayoning. Despite her increased lethargy she expanded her bathing activities to include washing her strings, the mirror, the table, and her hair. She would request, "Sandy wants to wash the table," and when encouraged by the clinician she would proceed to ineffectually daub the table three or four times with a sponge. Such requests seemed to emanate from the staff's efforts from time to time to introduce her to cleaning up the dining room tables after meals.

Her method of washing her hair was similar to that which she used to "wash" the mirror. She seemed to enjoy pouring a glass of water over the surface of the mirror, delighting as it cascaded into the sink. With a full glass of water she would pour its contents over her forelocks. These activities were accompanied by a profusion of giggles and laughter. As had been seen in her bathing of the hand puppets, when the clinician offered her a towel she would make one or two crude passes over the wet surface, describing her own activity saying, "Sandy's wiping the mirror."

As the month progressed there was a marked change in Sandy's mood. Euphoric giggles and laughter punctuated her verbalizations. Further expressions of her ebullience were seen on several occasions when she spent major portions of sessions singing. Her repetoire was varied with readily distinguishable melody patterns; however, her lyrics were misarticulated and often incomplete. When she faltered, the clinician would join in. With the added reinforcement provided by the clinician's participation, Sandy would complete the song and often ask to sing another.

Throughout the preceding months of therapy, numerous observations of Sandy's behavior had suggested perceptual dysfunction. Through the growing relationship it became possible to innocuously introduce activities which would provide opportunities to assess specific areas of performance. As she continued to manifest confusion in the naming of colors, the clinician improvised a simple color matching task by utilizing crayons and balloons. After several conditioning demonstrations of what was expected, Sandy showed that she was able to match primary colors. Limiting the presentation of colors to four crayons, she was unable to select a specific color which the clinician named regardless of the number of trials. Although the clinician repeatedly provided Sandy with the auditory reinforcement for the colors of the crayons as she used them she did not learn to name them correctly. Among her verbiage she made constant references to the color pink, asking for a pink toy or pink ice cream. Actually presented with a pink toy or crayon, she was unable to select or identify the color.

Presented with the task of matching pictures with the concrete objects of a comb, watch, and shoe it was found that Sandy could not respond appropriately. With both verbal and pantomime directions she seemed to understand that an object was to be placed on a picture but either failed to comprehend that the object and picture should match, or lacked the visual perceptual skills required for the task.

A cup, glass, plate, knife, fork, and spoon were presented and she was asked to select each item as the clinician named them. In the initial trial she would usually respond correctly; however, on subsequent trials her performance would deteriorate with an increasing number of erroneous responses.

Cognizant of the factors of fatigability and the difficulty of maintaining her attention, the clinician spent no more than two or three minutes on any single presentation and provided definite shifts between such task-oriented activities and the intervening unstructured activities. Whenever the clinician attempted to verify Sandy's original response through subsequent presentations it was generally observed that she made an increasing number of errors.

The severity of her language learning disability was especially pronounced in her confusion in naming animals. It was known that one of her favorite activities for many years had been looking at picture books and, accordingly, she had had prolonged and frequent exposure to the names of both farm and zoo animals. In her play during therapy with the wooden figurines of farm animals, she manifest extraordinary confusion in naming them. By limiting the number of animals to the horse and cow, the clinician attempted to see if Sandy could learn to discriminate and identify them. This was not successful as she continued to randomly evoke various animal names. From day to day or from moment to moment she might call the cow a pig, a deer, or a giraffe.

On two occasions during this month Sandy's capacity to verbally identify distant auditory stimuli was again demonstrated. The sound of the vacuum cleaner and the voice of one of the attendants reached the therapy room from a distant corner of the building, stimulating Sandy to perseveratively state, "Jean has a vacuum cweaner." On another occasion she correctly identified the voice of a staff member, saying, "Sandy wants to see Mrs. White. She will give you a cookie."

Sandy's continuous expression of wants in regard to food provided the clinician with an opportunity to engage her in imaginary play. In response to such a request as, "Sandy wants some hamburger," the clinician would pretend that it was available, pantomiming the offering and eating of the imaginary food. To the clinician's offering gesture, Sandy would extend her hand; however, she did not comprehend the abstractness of this game and would become distressed when she found that she did not actually receive something to eat.

A specific aspect of Sandy's language deficit had come sharply into focus at this point in the therapy process. With the one exception of the term "O.K?" Sandy had never expressed herself using an interrogative form. She used declarative statements to express needs or seek affirmation or negation. Although her statements were devoid of the rising inflectional pattern indicative of a question it became possible to identify those statements for which she expected responses through their repetitive production, combined with subtle aspects of her overall behavior.

Having come to recognize some of Sandy's limitations and capacities in language the clinician was able to modify her own behavior so as to lessen Sandy's frustrations in her constant confrontation with language which exceeded her abilities. Through the months of assessment it had now become clear that the increase of verbal exchanges was dependent upon the clinician's capacity to fit her verbalizations into Sandy's concrete frame of reference. With the clinician's growing awareness of the type of questions which would elicit a response from Sandy a steady increase in verbal exchanges occurred.

It had been found that only those questions which were framed in relation to something which Sandy had said and were presented in a specific form evoked a response. For example, when Sandy asked for an object or food she could be expected to respond categorically but not necessarily correctly to the question: "What would you do with ________?" Questions as to why she might want the item or how she might use it would invariably receive no response. Generally her responses appeared to be restricted to the following functions: eat it, wear it, cook it, wash it, drink it, and jiggle it. Thus, her response of "eat it" to the question, "What would you do with ice cream?" would appear relevant and appropriate; however, she would respond just as readily "wear it" to the question, "What would you do with a horse?" Her consistent use of certain noun-verb relationships reflected the constant reinforcement over the years of these forms in which the training history was evident. These fixed associations included: book-read, crayon-draw, picture-hang it on the wall, puzzle-put it together again, string-jiggle it.

To questions of when she was able to provide only today, tonight, yesterday, and tomorrow. While categorically appropriate, these responses were seldom correct. She was completely devoid of other expressions of temporal concepts.

Similarly, restricted responses were produced for questions of where. Her ability to locate objects or persons was limited in scope. Generally, things were "in the closet," "in your pocket," "on the floor," "upstairs," or "downstairs." With regard to people, she would locate them in either of the two buildings of the institution, the immediate community, or the principle nearby town. With only these few responses available, most of her answers to questions of where were so wrong that they were often humorous.

It had been established that Sandy had some recognition of the sex identity of people, being able to provide the terms "man" or "lady" but never "boy" or "girl." Her frequent requests of "I wanna see __________" gave the clinician many opportunities to ask her, "Who is _________?" To this question her only responses were, "A man," "A lady," or "Your sister." One of many examples of Sandy's confusion with regard to relationships was seen in the following excerpt:

S: Ah wanna see Mrs. Dow.

C: Who is Mrs. Dow?

S: A lady.

C: Who is Mrs. Dow's husband?

S: Your sister.

It should be noted that Mrs. Dow and her husband were both members of the staff and well-known to Sandy.

Certain types of questions repeatedly failed to elicit responsive speech from Sandy. These were questions which normally would stimulate a minimal response of "yes" or "no" if not a more elaborate answer. In other words, if asked such questions as, "Do you like" or "Do you want" Sandy would give no overt response or would restate the question echolalically.

Fifth Month (45th through 56th session)

A noticeable increase in Sandy's need to initiate body contact with the clinician occurred during this month. While sitting on the bench she cuddled and pressed against the clinician in order to achieve maximum physical contact. Her practice of pressing her cheek against the clinician's and resting her head on the clinician's shoulder also increased. Her gentle affection was the most overt manifestation of the developing relationship.

It became possible to assess some of the dimensions of the nature and extent of Sandy's frustrations in the course of commonplace day to day experiences. A major source of frustration arose from her ineptitude in handling her personal needs in the activities of daily living. One example of this was observed in the difficulties she encountered in the simple task of hanging up her coat. A doorknob was the only available spot to hang a coat in the therapy room. In a remarkably persistent attempt to use the doorknob as if it were a hook, Sandy repeatedly made the gesture of forcing a buttonhole over the doorknob, only to have the coat fall to the floor. Seemingly unaware that the coat had fallen, she would sit on the bench and a moment later discover that she had been unsuccessful. She would then repeat the entire performance, seemingly unable to adapt or modify her behavior. This conditioned performance was known to be the product of years of being taught to hang her coat by the buttonhole on hooks in various areas throughout the institution. Even though the clinician provided a model indicating the difference between the use of a hook and a doorknob, Sandy perseveratively pursued the originally learned technique.

The inordinate difficulties which she encountered in tasks requiring fine motor control were uniquely demonstrated in one occasion when she arrived with her string which had been threaded through pieces of macaroni. In jiggling her string several pieces fell off. Her attempt to rethread the macaroni on her string was executed crudely by pressing one against the other without looking directly at the task. Not until the macaroni fell to the floor was she aware that she had not succeeded. After several such failures she enlisted the clinician's help, pressing the string and pieces of macaroni into the clinician's hand and saying, "The lady will tie it on."

A similar problem was observed in lacing the Playskool shoe lace trainer. She would continually thrust the lace towards a hole but rarely attend visually to what she was doing. At times her tactile-kinesthetic perceptions were sufficient for her to ultimately hit the hole and draw the lace through. Upon completing the lacing procedure she would loosely knot and reknot the shoe lace until its entire length was consumed.

As had been reported earlier, Sandy's mode of crayoning continued to be linear scrubbing motions with occasional dottings. The clinician explored the possibility of introducing circular movements by guiding Sandy's hand. Although she passively accepted such guidance whenever it was offered, the moment the clinician withdrew Sandy would revert to her linear pattern.

In addition to the frustration incurred because of her inadequately developed psychomotor skills, her communicative deficits were the most frequent cause of distress. An endless series of crises arose from Sandy's inability to adequately comprehend the symbolic nature of language. When, for example, she was casually told by an attendant about all the good things she would have to eat at a birthday party which was to occur the following day, her confusion of time concepts led to a prolonged rage which was not ameliorated until the party was actually held. Although everyone with whom she came in contact during the intervening twenty-four hours tried to explain that tomorrow had not yet come, Sandy could not delay gratification. For Sandy there was only the present. She was unable to comprehend the past or the future.

Perhaps the most prominent source of frustration was based upon Sandy's ineffectual expression of her needs. Her listeners were constantly confused and unable to respond appropriately to her endless series of "wants." Compounding this distortion of expressive language was her random interchange of the verbs "want," "see," and "have."

Because of her continuing interest in picture cards, additional opportunities were provided to further assess her level of language functioning. In simple linear drawings each card pictured an object which would be familiar to elementary school aged children. As in other activities, her attention span was all too brief to sustain a continuous presentation of the cards. She would name four or five pictures and then utter some irrelevant statement to which the clinician would respond as needed; however, the stimulus of being presented with another card seemed to be enough to return her to the task. Despite these frequent interruptions, it was possible to sustain her interest in naming the pictures for entire sessions.

An analysis of her errors revealed certain consistent patterns. She had great difficulty when presented with pictures portraying isolated parts of objects, i.e., roof, feet, ear, doorknob, etc.

She provided many substitute responses which were associative in nature, i.e., a belt was a shirt; boat was river; radio was television; boy was man; bathroom was bedroom; tree was house.

When Sandy was unable to identify a picture the clinician found that by providing her with a statement in an elliptical form she was often able to fill in the missing word. For example, when Sandy was unable to evoke the word "book" from the picture stimulus the clinician said, "Sandy likes to read a ______." Often the elliptical statements stimulated responses in which she failed to integrate the auditory and visual stimuli. Unable to identify a picture of a bathrobe the clinician supplied, "This is a bath----" which evoked "bathinette" from Sandy. Shown the picture of a baby's bib and unable to respond, she gave "diaper" to the clinician's stimulus, "A baby wears a __________." When elliptical forms were given in which the word to be supplied by Sandy would be an opposite such as, "Sandy is a girl. This is a _______" she repeatedly failed.

When her errors were corrected Sandy would echolalically restate the clinician's model; thus, she provided herself with reinforcement of the auditory stimulus.

Varying the structure of the presentation the clinician set out groups of twelve to fourteen pictures which Sandy had been repeatedly exposed to. Then she was asked to select a picture from the group as the clinician named it: "Give me the ________." Sandy would reauditorize the directions for each picture. Under these circumstances the effect of practice was seen as she performed significantly better. Her remaining errors were consistent with her original mistakes.

Sixth Month (57th through 65th session)

Sandy's patterns of verbalizations and activities remained essentially unchanged through the final month of therapy. The clinician had become especially cognizant of the absence of any self-initiated change. Without the clinician's active intervention, Sandy would continually and perseveratively pursue her stereotypic behavioral patterns. This was particularly prevalent in the quality of the verbal exchanges. While contact was actively maintained through these exchanges and was considered a potential vehicle for expanding the relationship, it was found that the quality of Sandy's responses did not vary and were produced as automatisms. In the majority of instances it had become possible for the clinician not only to predict the particular structure that a question would have to take to evoke a response but also the specific response which would be forthcoming.

In the same way that the clinician's selected statements evoked verbal responses from Sandy, it was found that only the most concrete requests, directions, or commands elicited appropriate motor responses. While her responses were invariably delayed, necessitating several restatements, she could react correctly if asked to do such routine things as "close the door," "open the door," "hang up your coat," "put on your coat," "sit down," etc. As Sandy's responses were limited to such requests which had been repeatedly made of her over a period of many years it was obvious that they had been conditioned. As there were no situations in which verbal requests were made of Sandy without some contextual cues her ability to respond was not dependent upon the comprehension of the linguistic content.

During the final weeks of therapy an effort was made to explore possible ways of structuring activities in which she would have to depend solely upon language comprehension. It had been well-established that she was intensely driven in her pursuit of food, especially candy. Because of this she was easily motivated to perform simple tasks. First, in order to verify the often-made observation that she did not auditorily recognize the names of colors, she was presented with four plastic cups (red, blue, yellow, and white) and was allowed to see a piece of candy being placed under one of the inverted cups. After they were mixed by randomly moving them about on the table, Sandy rapidly and correctly located the hidden candy. Several similar presentations were made in which she experienced success indicating a memory for color.

In the next presentation she was prevented from seeing the candy being placed under a specific cup and was solely dependent upon verbal directions which identified the location of the candy according to the color of the cup. Under these circumstances she made repeated errors invariably selecting the wrong color.

Varying the presentation by using a paper bag, box, plate, and a boat Sandy was prevented from seeing the placement of the candy. Experiencing marked difficulty in locating the candy, she got up from the table and wandered around reechoing the directions and adding such comments as: "There is no more candy," "The candy is for tomorrow." She engaged in a disorganized search which included looking in the clinician's hand and pockets. Through the clinician's repeated auditorization of the directions she ultimately succeeded in securing the candy.

When the presentation was randomized by placing the candy in various locations within the therapy room Sandy experienced increased difficulty in following the simple verbal directions. She perseveratively continued to look in places where she had had success, as well as repeatedly returning to the clinician's hands and pockets.

The inordinate difficulty in language comprehension in this type of situation was felt to be indicative of organic impairment rather than a function of the quality of the interpersonal relationship.

One area of Sandy's expressive language which remained unpredictable was her assortment of unselected delayed echolalic material. She would perseveratively reiterate a particular fragment of something which she had heard, interjecting it every few minutes among her other verbalizations over the course of an entire day. It was not difficult to ascertain the original auditory stimulus when they were reproductions such as: "It's stinky," "WNAC 840 on your dial between five and seven," or, "Sandy wants a shoe string business." However, in her endless reiteration many of these phrases became so distorted through her endless addition or deletion of words, as well as misarticulations that what was heard often defied interpretation and obscured the source. Some of her mutterings were so uniquely irrelevant that adults' attempts to clarify them tended to auditorily reinforce their continuation. This phenomena occurred in situations when she might blurt out, "Sandy wants officer's mud," to which one could not help but ask, "Officer's mud? Now what would you do with officer's mud?"

Therapy was terminated by gradually reducing the frequency of the sessions.

Case Summary

Medical History

Because the first pregnancy of Sandy's mother had resulted in a miscarriage, her obstetrician prescribed a drug to prevent a recurrence. No complications in her pregnancy with Sandy were recorded; however, the following facts were noted: a thirty-one pound weight gain, slight ankle adema, "slightly hysterical" upon admission. Forceps were used in the delivery.

With the exception of the common childhood communicable diseases, there was no history of other physical illness that could account for Sandy's aberrant development.

Concerned by her lack of speech, slow development, and aberrant behavior Sandy's parents sought help. Just prior to her third birthday she was diagnosed as psychotic by an internationally prominent child psychiatrist. Sufficient information in the history of the parent-child relationship was available to identify areas of mismanagement, contributing to the development of her atypical patterns of behavior.

Neurological studies were limited to a singular standard neurological evaluation. No electroencephalographic studies were ever done although this had been recommended by a child psychiatrist based on a suspicion of underlying brain injury or a degenerative regressive process rather than primary autism. (6:0)

Previous Therapy and Educational Experience

Five years were spent in the care of a community child guidance center. In addition, Sandy was seen in a major psychiatric center for a special summer treatment program which included one month of residency.

Sandy was provided with a total of four years in several private nursery school programs, followed by two years of attendance in a public school's special class.

As significant changes had not occurred in her behavior and development despite the educational and therapeutic efforts of the schools and clinics, institutionalization was arranged.

Residency at Seaview

When Sandy was eight years and eleven months old she was admitted to Seaview.

Five years and six months of her residency were studied and revealed that her problems did not diminish as her stereotypic behavior and speech disturbances continued essentially unmodified.

At age fourteen her size, combined with incomplete toilet training and cataclysmic rages, made Sandy an extremely difficult management problem. In every aspect of daily living she experienced difficulty. She had not gained independence in self-care, functioning at the level of a preschool aged child requiring constant supervision and assistance. She was endlessly driven in the pursuit of things to eat, ingesting many nonfood items. Overeating and the resultant obesity compounded her problems. Her physical activity was severely limited by an all-pervasive lethargy.

The most prominent among the stereotypic patterns persisting since early childhood was her constant absorption in twirling a string between her thumb and forefinger.

Although Sandy displayed an excellent auditory rote memory, there were no significant increments in learning in either the psychosocial or academic spheres.

Experimental Therapy

Observations and impressions gained during the sixty-five sessions of experimental therapy were as follows:

Nature of the Relationship

With a strong emphasis upon the communication of acceptance through nonverbal modes, a responsive relationship developed but it was bounded by Sandy's inadequacies in language and speech. The absence of any expositional use of the play media created a restriction impeding the clinician's opportunities to react, reflect, or interpret. A transition from total avoidance of direct contact to active seeking of contact and affectionate interaction occurred as the clinician adapted and modified her own behavior having uncovered those things which Sandy uniquely perceived as threatening.

Increments in Sandy's relatedness were expressed in her motivation to come to therapy, the reduction of her enuretic behavior during sessions, the use of the clinician as a repository for her prized strings, and the lessening of catastrophic reactions.

It was found that her unresponsiveness had not been a function of the quality of the interpersonal relationship but rather a reflection of her linguistic deficits. By providing her with selected language stimuli the growth and development of the relationship was furthered in the increases of verbal interaction.

Perceptual Processes

Sandy's responses to external stimuli which were observed in both structured and unstructured situations were outlined as follows:

Olfactory.--No aberrant use of this modality was seen.

Gustatory.--The ingestion of nonfood items was extremely pronounced. This did not seem to be associated with a perceptual disability but rather the lack of socialization and Sandy's intense oral needs.

Tactile-kinesthetic.--Sandy often gave the impression that she had an astereognosis when she would ask for something which she already held in her hand. This seemed to be a dysfunction of the symbolic aspects of language rather than a tactile-kinesthetic deficit. In so far as she had some object in constant manipulation she received copious amounts of tactile-kinesthetic stimulation; however, her principle need seemed to be the visual stimulation provided by the movement of these objects.

Response to Pain.--No specific expressions of physical discomfort were noted. On the contrary, Sandy seemed inured to self-inflicted pain when she would bang her head or dig her nails into open sores.

Visual.--Constant visual movement stimulation was sought through twiddling strings or rocking. Most objects were viewed with peripheral vision while the focus of her attention was directed towards her moving string. When she looked directly at objects or persons she would simultaneously rock.

She manifest an ability to follow movement, match colors, and select or identify some common objects. The complete absence of any reproductions or copying of visual models suggested dysfunction of visual imagery. Her visual acuity as such was not suspect; however, the integration of visual and auditory stimuli was seriously impaired.

Auditory.--Sandy's auditory acuity was adequate for learning speech as demonstrated in her echolalia. While no end organ dysfunction was observed a central auditory disturbance was indicated by her overattention to extraneous stimuli in distortions of auditory figure-ground. Sandy responded to loud auditory stimuli with inordinate distress.

Motor Behavior

The combination of obesity, an everted gait, and poorly developed locomotor skills gave Sandy the appearance of being seriously retarded motorically. There was a pronounced tendency for her to avoid using her hands, often preferring her teeth as a substitute. Because of her preoccupation with the twiddling of strings, her hands were rarely used purposively. On those occasions when she attempted to perform a task involving her hands, she was inept and awkward. This, plus her overall lethargy and her inability to integrate verbal explanations or directions, impeded her development in gross and fine motor skills.

Vestibular Functioning.--It was noted that Sandy could engage in prolonged periods of rocking or bobbing her head and shoulders without any untoward effect upon her equilibrium.

Linguistic Functioning

Receptive.--Sandy was seriously impaired in her capacity to comprehend language stimuli. Although she displayed auditory memory functions, echoing lengthy verbal material, she did not demonstrate adequate recognition of the representational symbolic aspects of language. She had become conditioned to object and situational stimuli and responded accordingly. While behaviorally, words had meaning, they were not meaningful for Sandy. Auditory figure-ground disturbances were prevalent as Sandy would overattend to extraneous stimuli such as sounds external to the immediate therapy situation or to the phonemic content of words.

Expressive.--An examination of Sandy's peripheral oral mechanism revealed no structural abnormalities.

The intelligibility of Sandy's verbal productions was significantly impaired by irrelevancies, agrammatisms, articulatory errors, and distortions in pitch, volume, and rhythm patterns. Thus, her speech failed to convey the necessary communicative cues for normal listeners.

When she spoke it was usually the memorized literal reproductions of adults' statements. Misuse of pronouns and verb tenses were the product of being unable to integrate or rearrange what she heard into meaningful statements of her own. She was unable to transcend the concrete, having acquired only the ability to reproduce statements in the declarative form.

Her perseverative echolalic restatements required adult responses which would be consonant with the original verbal exchanges in which she had acquired them.

Fragmentary evidence of rudimentary symbol conceptualization was seen for absent objects and situations only when they were associated with strong motivational systems.

Time and Spatial Orientation

A total confusion of temporal relationships was manifest in Sandy's verbalizations.

Within the institution's buildings and grounds she showed some geographic orientation and the recognition of the permanent properties of objects, independently finding her own way about. Examples of a reduced capacity for dealing with spatial relationships were observed throughout.

Reaction Time

A notable exception to Sandy's lethargic and sluggish reactions to most stimuli was her swift and agile pursuit of food or candy. What Sandy uniquely perceived as threatening was also quickly reacted to. She overreacted to loud or harsh tones of voice, noise, sudden movement, and to overlearned verbal stimuli.

Learning

Attention.--Overattention to idiosyncratic activity made her extremely unresponsive to external stimuli. Paradoxically, a high degree of distractibility concurrent with the inflexibleness of an inability to shift severely impaired her capacity to learn. Her attention span increased in situations which were structured to accommodate her distorted use of language. Success and praise were found to be sufficient motivation for sustaining her attention.

Imitation.--Her ability to mimic the verbal productions of adults was overexercised to the point that she would echo any verbiage which she heard. Having been conditioned by adults' positive reinforcement for her imitative verbal efforts, she had developed a set in which it seemed that the major portion of her energies were expended in using her intact language skills--imitation and auditory memory.

Because of her perceptual centering upon verbal activity she was markedly deficient in imitating other facets of behavior, especially motor behavior. Any attempt to modify her motor performances were met with strong resistance as she vigorously stuck to only those patterns in which she had had success during the early years of her life. Thus, increments in new learning were minimal.

Memory.--The degree to which Sandy practised her auditory functions was detrimental to learning; yet, this was her principal coping mechanism and had become the focus of her energies. Unable to organize or synthesize this endowment with other aspects of the perceptual and cognitive processes, Sandy's intellectual functioning was reduced to the concrete, leaving the abstract aspects of language incomprehensible for her.

While visual memory functions seemed to be intact she was not usually able to integrate visual stimuli with auditory stimuli. This was reflected in her uncertainty when naming objects, persons, colors, etc. Despite an overworked auditory memory she had not mastered serial learning needed for counting or saying the alphabet.

Problem Solving.--Sandy's singleness of purpose in obtaining a desired goal or in overcoming some frustrating situation was limited to a direct mass action approach. In the face of repeated failure she would perseveratively pursue her course of action, failing to recognize possible alternatives. Although she could be momentarily deterred or distracted from a particular course by an adult she would return to reiterate the expression of her wants. Even after her concrete requests were met, her endless reiteration of these wants tended to obscure the exact nature of her desires.

CHAPTER V

DISCUSSION OF GROUP TRENDS

Family Backgrounds

Socioeconomic Status.--Whereas sustaining a child in long-term, private, institutional care represents an extraordinary expense to parents, the children reported upon herein would be expected to have economically advantaged families. It was found that their families did represent a high socioeconomic level as determined by the occupational attainment of the fathers, who were either professionals or engaged in executive or managerial positions. Within the group there were three physicians, a lawyer, dentist, textile designer, corporation executive, and an insurance executive.

Ethnicity.--A disproportionate representation of Jewish parents was found. One or both of the parents of eight of the thirteen children were of Jewish origin.

Education.--All of the parents' educational backgrounds included study beyond high school and in many cases graduate degrees.

Divorce or Separation.--Unlike the low incidence reported in Kanner's studies,[1] seven of the families in this group presented histories of disorganization. In one case, both parents had had a previous marriage. Also, three fathers had had previous marriages; one of these was terminated by the wife's suicide. Divorce occurred in two other families. Another marriage was terminated when the husband killed his wife and was sentenced to a prison term for manslaughter.

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[1] Kanner, "Problems of Nosology and Psychodynamics of Early Infantile Autism," p. 421.

Siblings.--The expected high incidence of male first borns has been presented in Table III, p. 3. With the exception of one child's sister who was described as schizophrenic, none of the subjects' siblings were considered to be anything but normal.

It can be seen in Table III that the ages of the parents at the time of the birth of the child studied was somewhat elevated.

Prenatal, Perinatal, and Neonatal Complications

When available, each child's hospital birth record was reviewed for complications of pregnancy, labor, delivery, operative delivery procedures, birth weight, and neonatal course. Under-reporting by hospitals of complications or abnormalities associated with pregnancy was encountered as had been the experience of other investigators.[1,2]

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[1] Pasamanick and Knobloch, op. cit., p. 78.

[2] Richard L. Masland, "Researchers Into the Prenatal Factors that Lead to Neuropsychiatric Sequelae in Childhood," Prevention of Mental Disorders in Children, ed. Gerald Caplan (New York: Basic Books, Inc., 1961) p. 57.

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TABLE III

FAMILY STRUCTURE

Child's Name	Father's Age[a]	Mother's Age[a]	Number of Children	Child's Position
Timothy[b]	--[c]	22	2	1
Debra	28	27	2	2
Glen	29	29	1	1
Dennis	38	32	2	1
Ronald	18	18	1	1
Peter	52	23	1	1
Jonathan	28	26	3	2
Joe	35	35	2	2
Scott	37	37	3	3
Joel[d]	51	27	2	1
Gene[d]	51	27	2	1
Sandy	28	24	2	1
George	39	34	5	4

[a] Parents' ages at the time of the birth of the subject studied.

[b] Adopted at nine months.

[c] Natural father's age not established.

[d] Twins.

Upon examining the hospital data together with the mothers' accounts of pregnancies and deliveries, it became apparent that in the majority of the children's birth histories numerous etiologically significant factors were operant.

While consensus has not been reached on sequelae of obstetrical procedures "minor perinatal noxae acting in different combinations or quantities may involve the human population in general, and may exert an influence on the over-all distribution of intelligence."[1] Certain relationships have been established between the birth process and impaired mental functioning. All evidence which has been cited in the research literature as incriminating for possible neurological damage[2,3] has been outlined for each child as follows:

Timothy

Perinatal:	Premature at thirty weeks; breech delivery
Birth Weight:	6:10
Neonatal:	Two months--operation, right inguinal hernia

Debra

Prenatal:	History of miscarriages; staining third month
Birth Weight:	5:9
Neonatal:	Second day--tremors; fourth day--rigidity; three months--operation left inguinal hernia

Glen

Prenatal:	Hospitalized for bleeding six weeks prior to delivery
Perinatal:	Premature rupture of the membrane
Birth Weight:	6:12

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[1] George Tarjan, "Studies of Organic Etiological Factors," Prevention of Mental Disorders in Children, ed. Gerald Caplan (New York: Basic Books, Inc., 1961), p. 45.

[2] Masland, op. cit., pp. 52-73.

[3] Pasamanick and Knobloch, op. cit., pp. 74-94.

Dennis

Perinatal: Two hour labor
Birth Weight: 7:8
Neonatal: Three weeks--operation, pyloric stenosis, oxygen for under twenty four hours

Ronald

Prenatal: Fall down flight of stairs, first trimester
Perinatal: Cord around neck; forcep delivery
Birth Weight: 8:3

Peter

Perinatal: Induced after twenty-four hour labor; low forcep delivery
Birth Weight: 7:2

Jonathan

Perinatal: Premature at thirty-seven weeks
Birth Weight: 5:15

Joe

Prenatal: Mother described as "neurotic hysteric"
Perinatal: Cesarean section
Birth Weight: 7:10

Scott

Perinatal: Induced labor
Birth Weight: 7:13 1/2
Neonatal: Three months--operation to remove hemangioma

Joel

Prenatal: Mother had Paget's disease since birth
Perinatal: Premature at thirty-seven weeks, low forcep delivery--twin
Birth Weight: 5:13
Neonatal: Oxygen incubator--twenty-four hours

Gene

Prenatal: Mother had Paget's disease since birth
Perinatal: Premature at thirty-seven weeks, low forcep delivery--twin
Birth Weight: 5:9
Neonatal: Oxygen incubator--twenty-four hours

Sandy

Prenatal: Itibesterol therapy to prevent abortion
Birth Weight: 7:2

George

Birth Weight: 7:1

Behavioral Deviations

Patterns of deviant behavior were manifest in all of the children prior to their first birthday, but their importance tended to be minimized or they were thought to be transitory phenomena. Family pediatricians, especially, supported the notion that the early bizarre behaviors were not really extraordinary and that they would probably pass. In some cases, the pediatricians thought that the child might be retarded. It was clear that the mothers had difficulty communicating to their pediatricians the extremes of behavior that they had to deal with daily and for which they saw only intensification as the child grew older. The parents became especially cognizant of their children's deviancy when, at approximately age two, the expected burgeoning of speech failed to occur or speech peculiarities were manifest.

The parents' responses to the research staff's inquiry form (Appendix A) about the specifics of the child's speech/language development and behavior lacked precision and were fraught with incongruities and inconsistencies. This might have been due to the vagueness of retrospection; in many cases, seven to ten years had passed. Therefore, few trends with regard to the children's early speech behavior could be established with certainty. The parents' perplexity and alarm were invariably intensified following an occasion when they had an opportunity to contrast their child's speech/language functioning with that of other children of the same age. This disordered communication appeared to be fundamentally distressing as it permeated all areas of child rearing and was, therefore, the principal complaint when professional help was sought.

Among the most frequently mentioned deviancies second only to the children's disordered communication and speech peculiarities were head banging, rocking, hand flapping, arm waving, and jumping. Combined with sleeping, eating, and severe digestive disturbances, such deviancies contributed to stress in the child-mother relationship. Escalona has described what she believes to be the process contributory to a defective mother-child relation and, in so doing, aptly has set forth a summary of the characteristic behavior present in the early life of the children in the group under discussion.

> A baby who will not eat when food is offered, who cries when he is expected to sleep, who is incessantly active or pathologically lethargic, who reacts with panic by resistance to routine procedures such as bathing or being dressed, and who rarely provides for the mother the emotional gratification that comes from having the baby respond to her positively, cannot help but be upsetting to even the most loving mother.[1]

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[1] Escalona, op. cit., p. 54.

Stress was encountered in the lives of the children studied as a consequence of their parents' continuing efforts to socialize them in the face of their gross unresponsiveness. This unresponsiveness to human contact, considered to be an outstanding early manifestation of infantile autism, was usually stated explicitly by the parents of this group when they used such expressions as: "not cuddly," "not smiley," "inactive," "apathetic," "dull," "unusually quiet," "did not enjoy body contact," "no demands," and, "indifferent." As Escalona has suggested, when the pathology is viewed as arising from within the child rather than as a product of defective maternal attitudes, the devastating effects upon the psychological atmosphere in the home may be partially comprehended.

In the presence of extreme divergence in all areas of behavior beginning in the first months of life, the mother-child relation for this group seemingly never had an adequate foundation on which to grow. Accordingly, insidious maternal rejection, so often cited as explaining most of the behavioral deviations in psychotic and non-psychotic children, could not be established as etiologically significant. If maternal rejection and its accompanying stress were in actuality present, their intensity was directly proportional to the child's behavioral deviations.

Most clinical workers consider the crises of early separations as having a profound effect upon the development of an adequate mother-child relationship. There were many cases of separation in this group. In addition to those which would normally occur at the time of the birth of a sibling, four of the children required hospitalization prior to their first birthday. Such crises and the sorely stressed parent-child relation received the focus of attention in the diagnostic studies, while attention to organic factors apparently was minimized or disregarded.

Diagnostic Studies and Previous Therapy

In the search for an explanation for the child's multiple problems, in most cases the children were seen by a diversity of specialists but were ultimately referred for psychiatric services. They were studied extensively, often involving several psychiatric clinics, some of which are internationally famous, and often by psychiatrists identified as the leading authorities dealing with the psychopathologies of childhood. For each clinic visited new nomenclature was affixed, frequently as part of a differential diagnostic statement but with the terms "autism," "childhood schizophrenia," or "atypical" maintaining a central position in all cases. The influence of psychiatric diagnoses was evident in the subsequent diagnostic deliberations of specialists outside of psychiatry; although each specialty tended to emphasize those features of the case which were concordant with their training. The belief that the majority of the child's disordered behavior was psychogenically determined often persisted in the face of conflicting evidence. Central nervous system pathology was established in eight of the thirteen cases; five by electroencephalographic study and three by neurological examination. Of the remaining five children, two had equivocal electroencephalographic studies, two were negative, and one had not been studied neurologically.

Jonathan's case history was an example of the chaotic state of the diagnostic process in which some workers stated their diagnosis with exacting certitude while others elected to make tentative statments or provide only "an impression." He was called retarded, autistic, atypical, and schizophrenic. Obscured or absent throughout the reports by Jonathan's parents and the psychiatric clinics who treated him was a history of seven convulsive episodes starting at age three. Five of these occurred prior to his placement at Seaview and two after. Brain damage was confirmed by electroencephalographic study at age eight and anticonvulsant medication prescribed.

Diagnostic conflict was also seen in the case of Ronald who received three diagnoses of cerebral palsy and two of childhood psychoses--"schizophrenic type disorder" and "infantile autism." Two and a half years of psychotherapy were given with no success and no attempts to verify or refute the prior diagnosis.

The reports received from the clinical workers who studied the children and their families provided certain trends common to the group. Many workers were struck by the readiness of the child to separate from his mother. Also, the child's indifference and overall unresponsiveness were cited as the manifestation of the autistic withdrawal. The lack of speech and language tended to be seen as a resistance to abandoning the defense of an autistic withdrawal. Their indifference to the external world and their absorption in compulsive and ritualistic behavior were described in terms which implied that the child had the capacity to react. Accordingly, the lack of speech and language were seen as a matter of the child's volitional choice. Support for this hypothesis was based upon the belief that the child understood what was occurring around him and what was being said to him. Further, for those children who used words or displayed feats of auditory memory, it was argued that the child could talk when and if he wanted to and that some form of a regression or fixation was in process. Apart from citing pathogenic incidents such as the birth of a sibling, accidents, or changes in residence, emphasis was given to defective maternal handling and neurotic features of the mothers' personalities. These were stated invariably as prime etiological factors in the child's disorder and reflected in the child's withdrawal. A few parents were reportedly highly mechanistic in their management of their child especially in the dimensions of feeding and toilet training, some of which was accountable to the prevailing pediatric advice at that time. If the mothers were not thought to be immature, they were thought to be either driven, obsessive, neurotic, or hysterical. Since it is known that most clinically discernible signs of neurological damage present in infancy disappear as the child develops[1] it is perhaps understandable that a case for biological causation might not be readily accepted; however, in the face of laboratory evidence for brain damage the notion that defective parental behavior can produce the child's disorder would need to be seriously reconsidered.

All of the children involved in this study had received psychotherapy; some for only a few months while others had daily treatments spanning several years. Having to admit the child to Seaview seemed to represent for this group not only defeat for the parents who had tried unsuccessfully to socialize their child, but probably also for the many child therapists who had attempted to ameliorate the child's mutliple problems through psychotherapy.

Attempts for school placement were made for many of the children but never with success. Ordinary nursery schools, kindergartens, or classrooms were not prepared to deal with the vastly different behavior of these children and dismissed them summarily.

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[1] Pasamanick and Knobloch, *op. cit.*, p. 75.

Initial Observations

In each case study remarkable similarities were noted when the descriptions of the child's behavioral functioning which had been made prior to placement at Seaview were compared to the initial observations of the research staff. Where differences in behavior existed, they could be attributed primarily to maturation. It appeared that the structured environment of the institution and the separation from the presumed source of "infection," the parents, had not significantly affected the overall functioning of the child.

Because the children were maintained in groups of two to four with one attendant, it was possible to supervise closely the activities of each child. Those attendants who rigorously adhered to a schedule and consistently tried to "teach" the child elementary self help, managed to pattern their dressing, eating, and toileting activities. However, when changes in personnel occurred, little or no transfer of learning took place. Strong, externally imposed limits by an authoritarian attendant led to an ordered existence for some of the children and gave them the appearance of having made some improvement. However, when a different adult was in charge of their care they would regress immediately.

In each case, the consequences of the child's impaired communication accounted for daily upsets. For those who produced words, the agrammatical character of their productions often prevented comprehension even by the most experienced staff members. The subtleties of the child's crude nonverbal communication tended to escape many of the workers, thus further reducing the possibility for understanding. Many workers appeared to cease their attempts to interact with the children and assume a laissez faire attitude.

The children's inaccessibility remained constant. In marked contrast to the adult schizophrenic, no evidence was present which suggested that the autistic/schizophrenic children described in the case studies had experienced any remission from their illness at any time.

It was found during the period of initial observation that the thirteen children studied could be treated as two groups, differing in expressive language functioning.

1. Eight of the children produced vocal utterances which were limited to reflexive sounds, single or reduplicated vocalizations which could not be identified as linguistic forms, and a variety of sounds for which symbols do not exist in the International Phonetic Alphabet. Although these children were nonverbal, none of them were "mute"; a term which implies aphonia. These eight children were referred to as the vocalization group.

2. The remaining five children produced intelligible sounds and words imitative or suggestive of speech. Reflexive vocalizations, imitations of non-speech environmental sounds, and unintelligible jargon comprised the remainder of their vocal output. These five children were referred to as the talking group.

Several aspects of the children's behavior have been discussed in terms of these two groups as it was observed that a depressed function in speech/language parallelled limited functioning in other areas.

Motor Behavior and Qualitative Aspects of Hyperkinesis

Precise data about the children's motor development were not obtained from their parents or pediatricians. The parents were generally uncertain in their responses to the questionnaire (Appendix A). An impression of a moderate delay in motor development was, however, suggested in certain cases.

Observed motor skills were markedly deficient for the entire group. Although these children had been walking and running for several years, most were inadequate in some aspect of coordinated movement of the trunk, legs, and arms. Profound motor deficiencies were observed in the case of Debra whose history, interestingly, was without any report of her inability to rise independently from a sitting position on the floor. Further, it was observed that at age five she could not climb or descend stairs without assistance.

Within the vocalization group, motor skills tended to be poorly developed and in marked contrast to the overall performance of the talking group. The five children in the talking group were able to ascend and descend stairs with alternating feet, manage their own clothing including buttons and zippers, and eat with utensils (predominantly spoons).

The performance of the children in the vocalization group tended to be particularly depressed in the areas of dressing and feeding. Two of the children had to be fed, while the remainder of the group rarely used utensils. Only George was able to manage buttons and zippers and consistently used utensils to feed himself. Five of the eight children comprising this group did not descend stairs with alternating feet.

Grasping activities of eleven of the thirteen children were at the level of a one year old. This lack of fine finger dexterity was patently manifest in their inability to tie their shoelaces, catch a ball, use crayons, paints, or other graphic media in any way but the most infantile manner.

Of particular note was the static character of the children's motor development. No significant changes were determined during the entire period of study.

Extensive patterns of hyperkinetic behavior as a function of distractibility were exhibited by all children in both the vocalization and talking groups. The children appeared to be involved in a continuous game of movement in which their attention was focused on moving rather than stationery stimuli. When moving stimuli were not present, the children apparently set their environment in motion by moving themselves while fixating on a stationery object. These forms of repetitive movement tended to occur when the children were unable to deal with sensory experiences. It was as if the demands upon their cognitive processes became intolerable so that they sought simplified stimulation, thus achieving order and sameness by blocking out the disordered perceptual input. Once engaged in these patterned motor activities the children seemed protected against the distracting influences of a chaotic external world and appeared to be in a trance-like state encapsulated and effectively walled off from external stimulation to the extent that even high intensity noises failed to jar the rhythm of their movement.

The case histories of the entire group were replete with examples of a diminution in their need to actively engage in repetitive motor activity by passively participating in movement, i.e., when riding in automobiles or when in the presence of moving stimuli such as spinning record players or electric fans.

The vocalization group tended to involve their entire bodies in stereotypic motor patterns often combining toe walking, rocking, pacing, hopping, leaping, whirling, or pogo stick jumping with arm flapping or choreaform movements of their arms and hands. Their only utilization of objects and play materials was to occasionally incorporate them in their continual game of motion. These gross manipulations took the form of persistent poking, mouthing, smelling, fingering, pushing, flipping, and picking up and dropping. They exhibited a marked preference for those textured materials which afforded maximal tactile-kinesthetic stimulation.

The talking group restricted their movements to segmented body parts as opposed to gross bodily movement. In their perpetual pursuit of motion they tended to use objects, persistently twiddling a piece of string or rotating jar lids. Although nonpurposeful, they often utilized objects and play media in ways for which they were intended, as seen in the repetitious turning on and off of water faucets, light switches, stoves, and vacuum cleaners, manipulation of locks and catches, opening and closing doors and cabinets, random scribbling with crayons, and aimless rolling of clay. Few materials in their environment afforded such a high degree of dependability and predictable performance for them. Accordingly, their preoccupation with such mechanical objects, household appliances, and certain play materials can be understood as a manifestation of their effort to gain equilibrium in sameness and as a defense against the uncertainty of incomprehensible change.

In our observations, it was not possible to assign any dynamic significance to the individual child's selection of a particular movement pattern, nor did these patterns appear to represent recreations of early traumatic experiences, nor had they been modified since their onset in early childhood.

The Adequacy of Oral and Respiratory Functioning

None of the children had any significant structural abnormalities of the peripheral oral mechanism which would impede the production of sound.

The vocalization group was markedly deficient in the precise volitional control of their oral and respiratory musculature. They had a characteristic looseness of the oral musculature prevalent in all areas of oral functioning. Each of the children in this group was grossly inefficient in the mastication and ingestion of food. The three youngest, five, six, and seven years of age, salivated excessively and had not mastered the fine motor control of their tongue and lips in order to contain and swallow the food placed there by an adult, so that for every portion which was swallowed an equal portion fell from their mouths. Four of the children exhibited extensive patterns of hyperventilation; in addition, two of the children practised breath holding to the extent that they often appeared cyanotic. Each of these children was grossly deficient in learned activities which required precise control of the breath stream, patently manifest in their inability to blow their noses, extinguish lighted matches, inflate balloons, or blow bubbles. These deficiencies in the volitional manipulation of their oral mechanisms precluded the possibility of precise formation of sound patterns into words.

Such problems were far less prevalent in the talking group. As defined, the verbal productions of this group inferred the adequacy of their speech mechanism. All of these children, while not efficient, were independent in eating and were able to engage in most blowing activities; however, only Scott was capable of inflating a thin-skinned balloon.

Response to Non-speech Environmental Auditory Stimuli

It should be recognized that prior to the evocation of an overt response to auditory stimuli, an organism must not only be able to hear the sound at the primitive level of audition, but also must be able to attend to particular sounds by separating foreground from background, differentiate between the gross characteristics of sound, and associate specific sounds as signals representing things or events already known.

In the vocalization group, non-speech environmental sounds of maximum intensity did not evoke the fear or modified startle response which one would anticipate in an intact organism. Generally their responses to all non-speech environmental sound stimuli were either absent or markedly depressed. Non-speech auditory stimuli had not assumed the value of a signal and thus had not become meaningfully substituted for things or events. While this auditory dysfunction was undoubtedly retro-cochlear, its origin and nature remained obscure.

The children's auditory acuity was not suspect as the quality of their vocalizations were not characteristic of those associated with a significant hearing loss. Some of the children tolerated the earphones of an amplifying system on several brief occasions. While not responding to the voices of the clinicians, they tended to increase temporarily the quantity of their own vocalizations in reaction to the amplified feed-back of their own voices. Some of the children in the vocalization group gave further evidence of auditory acuity by their physical response (rocking or subdued behavior) when music was played.

The talking group's response patterns to environmental auditory stimuli differed significantly from the vocalization group. They exhibited a heightened distractibility for all auditory stimuli and overtly negative responses to loud sounds whether they were nonverbal or speech sounds.

Their disturbances of auditory figure-ground discriminations for non-speech sounds were of particular interest. While normals tend to filter out sounds which are not relevant to their focus of attention, these children over-attended to extraneous stimuli. Because of the divergence between the child's auditory frame of reference and that of the observer, it was difficult to isolate the specific stimulus which evoked the child's vocalizations. This was especially so when the child was mimicking background sounds while the observer was attending to the foreground. A child could be completely absorbed in hyperkinetic activity, manipulating some object, and simultaneously emit vocal noises which appeared to be self-generated and unrelated to his immediate environment. Thus, the image created was aberrant and could be readily misconstrued as a hallucinatory process. A review of the tape recorded samples of the children's vocalizations established that many of the sounds which they emitted were often evoked by such remote stimuli as the distant screams of other children or common mechanical noises. At the same time that distractibility was operant for extraneous stimuli, the children would vacillate and perseveratively focus upon foreground stimuli. Distractibility can be explained as a function of the organism's inability to assign specific values to auditory stimuli; accordingly, the organism reacts in an undifferentiated manner. Over-attention or perseveration can be viewed as an attempt to bring order out of chaos by attending to one stimulus in order to exclude the many which impinge upon the individual.

Pre-linguistic and Linguistic Functioning

The quantitative differences of vocal output within the vocalization group ranged from continuous vocalizations extending over a period of hours to sporadic productions punctuating periods of silence.

The quantity and quality of vocalizations were highly variable from child to child and within each child from time to time. Detailed listener analyses were made of tape recorded samples of four children in the vocalization group. Among the vocal features observed were: 1) extensive use of prolonged monotonal vocalizations with many occurrences of high pitched sounds; 2) extreme ranges of intensity levels from whispers to excessively loud vocalizations; 3) extensive variation from normal voice quality with considerable hoarseness, harshness, and hypernasality interspersed between normal phonations.

Although autistic children have often been reported as being precocious with regard to musical ability, this was not in evidence for the children in this group. A few of the children combined syllabic vocalizations into musical phrases. One child in particular repeated the rhythm and melody of a musical phrase several times, then changed the musical key of the phrase upward (as in a sharper key) or downward. After several of these repetitions he would pause for a period of time and then begin a new series of musical phrases in a different rhythm and melody pattern. At no time could the musical phrases be identified as familiar tunes by the listener-researchers.

The vocalizations were further analyzed by using the symbols of the International Phonetic Alphabet to describe approximations to the vowels and consonants of speech. While a variety of vowel-like sounds were heard, a comparison with the vowel qualities of American speech revealed noticeable distortions. The syllable utterances did contain some sounds resembling consonants. The consonants tended to resemble the nasals (m) and (n), the stop plosives (p), (b), (t), (d), or (k), (g), and the semi-vowels (w) and (y). Any sounds resembling the semi-vowels (r) and (l) and all of the fricative consonants (f), (v), (s), (z), (th), (sh) were notably absent from the vocalization group.

Physiologically, the vowel-like sounds lacked the precise positioning and movements of the tongue, lips, jaw, and soft palate necessary for normal speech. The consonants were also those requiring relatively loose contacts; that is, those not requiring increased air pressure forced through precise and narrow constrictions of the vocal tract. At no time did the vowel-like and consonant-like vocalizations approximate meaningful speech nor was there any suggestion of even partial echolalic imitation of the adult speech in the child's environment. Further, none of the sound productions could be identified as having any propositional value, but appeared to regenerate themselves through kinesthetic and/or auditory feedback. The children's imitative capacities were restricted to reduplications of self-generated auditory stimuli. They did not evince any imitative behavior for external auditory stimuli.

Apart from the reflexive sounds of disinhibited laughter and crying, the normally expected affective features were absent or distorted in their vocalizations. Thus, the communication of feeling was seriously impaired. It was found that when the observer was able to assume a set which did not rely on the culturally expected communicative signals, the child's consistent patterns of deviations became meaningful. Eventually it became possible to discern the individual child's mood and emotion from the quantitative and qualitative aspects of his vocal productions.

The only behavior which could be classified as distinctly communicative in this group was the use of gross physical manipulation.

The most crucial aspect of the children's language deficiencies was observed in their receptive functioning. With varying degrees of severity, the children in both groups were seriously impaired in their capacity to comprehend language. The four youngest children in the vocalization group, ages five, six, seven, and ten, were completely unresponsive to the semantic content of whatever was said to them. Although inconsistent, their momentary cessation of hyperkinetic activity and occasional visual contact with the speaker constituted their only overt response to non-threatening verbal stimuli. Their fear responses to threatening verbalizations were similar to those manifest by the group as a whole. Reactions of protective posturing seemed to be elicited by the total behavioral configuration of an adult's negative affect. In artifically structured situations when negative statements were made which were devoid of affective or nonverbal cues, the children did not respond.

The four older children in the vocalization group and the entire talking group had apparently become conditioned to a limited number of verbal commands. Certain phrases and sentences which were repeatedly presented in a given order and contiguous with concrete situational cues had become adequate stimuli for the child without the recognition of the specific symbolic significance of the individual words contained therein. Commands such as, "Come here," "Close the door," "Hang up your coat," "Sit down," "Turn off the light," were adequate stimuli which evoked appropriate responses. However, continued observations indicated that the words had no symbolic meaning to the child even though, from the adult's point of view, they functioned effectively as symbols. Thus, a child's response could mislead an observer to infer that the child understood language when, in actuality, his response was a function of conditioning; real comprehension was lacking. When the usual cues contained within the gestalt of the adult's behavior which carried the force of the command were absent, or the situational context was changed, the child's performance disintegrated. In other words when such commands as, "Sit down," or "Close the door," were said quietly and without affect or gesture, the children tended not to respond.

When commands were given in which the meanings were synonomous but the words were varied from the original model to which the responses had been conditioned, the child no longer responded appropriately, e.g., when a request like "Put that light out," was substituted for, "Turn off the light," or "Put your coat on the hook," was used in place of, "Hang up your coat."

Numerous examples of erroneous or substitute performances were noted when commands were given in which the appropriate affective cues were present but gesture was absent. Lack of language comprehension was demonstrated when a child had to depend exclusively on verbal cues. For example, when the direction to close the window was made without the use of gesture, the child's response was marked by gross uncertainty, manifest in reitereated but hesitant movements, ultimately ending in a substitute response such as turning on the light. During such a performance the child repeatedly checked the clinician visually for approval or disapproval.

The speech of the talking group consisted of words, phrases, and sentences as well as non-speech vocalizations.

Both the speech and non-speech phonations showed the same wide variations in pitch, intensity, duration, and quality as displayed by the vocalization group. The most characteristic utterances of the talking group were immediate echolalic reproductions of part of the statements of adults. They exercised their imitative abilities, rarely recognizing the meaning of what they were repeating. The reward of approval was invariably expressed by adults' positive attitudes for the child's imitative verbal efforts. It appeared as if the children had developed a set, having been conditioned by positive reinforcement to use their primary language skills--imitation and auditory memory. Regardless of the structure or nature of the adult's statements whether they were declarations, interrogations, imperatives, commentaries, descriptions, reflections, or interpretations, when the children responded it was usually echolalic in form. These imitative productions tended to be the last word or two of the adult's statement; however, Sandy, Scott, and Dennis exhibited well-developed auditory memories in their reiteration of entire sentences.

The five children in the talking group had become conditioned to produce not only actions but also words, phrases, and entire sentences in response to specific situational stimuli by virtue of contiguity, frequency, and reinforcement. In the same way that a verbal cue could provoke a response, situations could act as adequate stimuli in their own right. These utterances were exclusively replications of verbalizations which the children had actually heard, and without exception did not represent original thinking. The process by which they were acquired was observed to be as follows: first, it was necessary that the child hear and directly imitate the phonemic elements of the verbalization of the adult. It appeared that the material which the child selected to imitate was partially dependent upon chance and the frequency with which the stimulus was presented, the affective implications of the stimulus, and the relation of the stimulus to the needs of the child. The extent of the material echoed appeared to be a function of the child's auditory memory span. The principle of reinforcement was operant in the second phase when the child perseveratively re-stated what he had heard. The children were heard whispering and shouting their acquired statements, endlessly practising and thus providing themselves with their own reinforcement. Often, the auditory stimulus was repeatedly presented by the adult, furthering the reinforcement.

Since the adult's verbalizations which evoked the original echolalic response in the child were heard in relation to specific situations, the children had become appropriately conditioned to these situations. Thus, through this process, certain words, phrases, and sentences would be evoked by the child whenever he was confronted with an equivalent situational stimulus. When the situational stimulus was apparent to an observer, the child's utterances seemed relevant and sensible and might be erroneously thought of as a demonstration of the child's intellectual potentialities; however, these literal reproductions of phonemic sound patterns had not acquired significance as representations of meaningful language units. This closed loop phenomenon in which stimuli enter the system, are stored, and then are reproduced unchanged, is what Kanner has called "delayed echolalia." Although he has recognized it as being "intellectually incomprehensible to the child" he has accounted for it solely on the basis of an affective disturbance.[1]

The statements of adults which were made in situations having elements of positive or negative affect were prominent among the children's delayed echolalia. Despite the fact that the children heard many positive comments from their attendants, most of the material echoed was in the nature of prohibitive phrases, threats, and chastisements. Such statements as, "Stop it," "That's not to break," "You are a bad, bad, boy." "Get out and stay out," "If you do that again I'll put it on my report," were produced with greater frequency than, "Do you want some ice cream," or, "Do you want to go for a ride?" One of the children who excelled in auditory memory could parrot an entire sequence. "Sandy's giving the dolly a bath. Put the dolly away now. Thank you, Sandy. That's a good girl." Another child was regularly heard restating one of the most frequent inquiries made by adults, "Do you have to go to the bathroom?" These utterances exemplified the characteristic pronominal reversals as well as the children's use of the third person when referring to themselves. As pronouns are among the most abstract of grammatical forms it is not surprising that the children were limited to literal and concrete pronominal reproductions. Inferences can be made from the children's behavior which would explain the "I-You" problem as a manifestation of a defect in the individual whose cortical activity is limited to sensation and memory and who lacks the ability to integrate or relate the two. Their lack of the use of the personal pronoun "I" as a self-referent would then be thought of primarily as a dysfunction of abstract and symbolic processes and only contributory to the development of an ego defect. This view would be in marked contrast to Kanner's assertion that the pronominal reversal phenomenon is accountable solely to the affective disturbance.

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[1] Kanner, "Autistic Disturbances of Affective Contact."

The children had developed repertoires of verbal material reflecting their individual endowment in auditory memory. Through rote memory Sandy had acquired a remarkable facility to reproduce numerous songs, rhymes, advertising slogans and jingles, and idiomatic expressions. Scott could spend hours verbally performing simple arithmetic number operations or spelling out words. As the adults in their environment prized these expressions of language ability, reinforcement was provided by their positive responses, thus encouraging the children in these memory exercises.

This perceptual centering of the child's performance in feats of auditory memory can be viewed as the concentration of the energies of a defective organism in a singular aspect of his total functioning with which he can come to grips with the world. Scheerer, Rothmann, and Goldstein[1] have related this perceptual centering of the child in auditory rote memory exercises to a defect in abstract capacity such as would be found in a talented ament. In a different institutional setting, this verbal precocity and skill with number manipulations would be viewed as the behavior of an idiot savant.

The delayed echolalic utterances which were founded in concrete experiences on a stimulus-response basis could not continue to exist without periodic reinforcement. The children provided this needed reinforcement through constant reauditorization. This reechoing of an utterance could be heard as the child engaged in various activities far removed from the precipitating situation. Without the recognition that the child was practising and reauditorizing phonemic sound patterns, his irrelevant verbal behavior could appear particularly bizarre and be misconstrued as part of a psychotic process.

The children tended to include approximations of the rhythm, phrasing, intonation, and inflectional patterns in their initial imitations, but these vocal characteristics dropped out during their repetitive practice. Without these cues their utterances were flat and devoid of affect. It would seem that their lack of affect was due to their inability to grasp the essential meanings of the words as language units which result in their perceptual centering on the reproduction of the phonemic elements. As other dimensions of their behavior were replete with demonstrations of disinhibited affective expression, it would appear that their inability to express feelings and emotions through language was a function of their basic deficit in handling anything which transcends the concrete.

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[1] Scheerer, Rothmann, and Goldstein, _loc. cit_.

The intelligibility of the children's delayed echolalia was further distorted by agrammatisms and articulatory errors which occurred during their multiple reauditorizations. The children often were distracted by the kinesthetic elements of sound production in which they would delay, elongate, reduplicate, or abbreviate individual phonemes or entire words. This resulted in a total distortion of a significant portion of their verbalizations.

Occasionally, the three most verbal children produced a type of verbalization which appeared to be responsive in nature. When Sandy was asked, "What is it doing outside today?" she would consistently respond, "It's raining," even though the sun might be shining. Similarly, a question such as, "What did you eat for lunch today?" would invariably evoke the response, "Hamburger pie," although the menu was varied from day to day. Conventional inquiries which adults frequently ask of children, i.e., "What's your name?" "Where do you live?" "Who do you see in the mirror?" often elicited appropriate responses. However, in order for a child to respond to the adult's question, the inquiry had to be presented in a way which was consistent with the original conditioning experience. Also, it was frequently necessary that the child restate the question prior to his evocation of the memorized response. A qualitative analysis of these responses revealed that while they were meaningful in the behavioral sense, they did not have meaning as representational symbols for the child. The responses were indicative of the existence of primitive stimulus-response bonds in which the training history was evident; however, there was no suggestion that symbol-concept relationships existed. While the words themselves were related to one another and to the situation in which they were used, the children did not appear cognizant of their symbolic significance.

Only the most rudimentary representational symbolism for objects which were related to concrete and immediate experiences was operant. Their representational use of language did not exceed the level of concrete nouns. With varying degrees of intensity the children seemed driven to practise the naming of objects and pictures which were present within their visual and/or tactile field. Their capacity to readily name or label was not comparable to that of a normal two year old child and was severely impoverished by the complete absence of abstract and collective nouns. There was no evidence that other parts of speech had any symbolic significance. Like the normal child, in their uncertainty as to the correctness of their perceptions, they would repetitively name an object; however, even when an adult verified their perception, it had only a momentary effect and did not seem to facilitate the integration of the word as a permanent acquisition. Their continuous checking and rechecking of their perceptions bore witness to their never-ending efforts to order concrete sensory stimuli; however, as they were unable to adequately integrate or conceptualize, their perceptions remained unstable. At times the repetitive naming of an object functioned propositionally with each of the reproductions increasing in loudness and pitch paralleling the child's mounting tension. When immediate reinforcement was not evoked from the adult the child would substitute words, using a trial and error approach, in his panic to verify his perceptions. Perseverative responses also occurred as the child would repetitively substitute a previously correct response when he was confronted with an object or picture which he could not name.

Although the children exhibited this minimal skill in naming and labelling objects when the specific stimulus was present, they experienced marked difficulty evoking the same words propositionally when the objects were absent.

Because of the limited nature of their vocabularies, single nouns tended to be used over-inclusively with generalized non-specific meaning, representing a total configuration of events. For example, when a child said, "Bathroom," it could mean that he needed to toilet, wanted a drink of water, or wanted to engage in water play. More often than not the child would resort to nonverbal modes of expression, using physical manipulation in his effort to communicate.

It was seen that these children were able to make only the most elementary associations between sensory stimuli and memory. Apparently unable to order their sensory experiences into a meaningful gestalt, their perceptions were limited to a molecular or atomistic view of the world and, therefore, they were prevented from managing language and its tools. In opposition to the classical description of autistic children as aloof, indifferent, or negativistic, both the vocalization and the talking groups displayed a remarkable willingness to participate in human society by making maximum use of whatever communicative skills they had.

Personal Relationships

Intensive observations of the children's behavior were afforded during the six months of relationship therapy. Both clinicians followed the rationale suggested by Moustakas[1] based upon the child-centered approach.

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[1] Moustakas, *loc. cit*.

The children were free to explore the available space and the contents of the room and to use the time for their own purposes. The clinicians did not intervene in their activities except where it was necessary to protect the individual child or the clinician. Accordingly, the atmosphere was free from an externally imposed authority and could be properly designated as permissive. With the minimum of limitations imposed upon the children's behavior and in the atmosphere of permissiveness inherent to relationship therapy, the children came to reveal the scope of their dysfunctions.

The clinicians sought to express their recognition of the children's feelings as manifest in their activities or verbalizations; however, none of the children engaged in play or used the therapy materials in ways which portrayed feelings in typical behavior. Thus, in the absence of thematic content, the clinicians' reflections were limited to the children's gross expressions of positive or negative affect and to descriptions of their sterile, repetitious patterns of behavior. The absence of observable responses to the clinicians' verbal reflective commentary was initially thought to be part of the child's autistic withdrawal and rejection of human interaction, and was not regarded as basic to the child's impairment in dealing with the abstractions of verbal material. The clinicians were influenced by the prevailing professional view that the children were fully capable of understanding what was said to them and had elected not to respond. Upon becoming aware of the children's receptive language dysfunction this position was abandoned. It was recognized that the children were willing to relate but that they were only able to relate through preverbal modes of communication. That their silence or otherwise disordered language activity reflected a retaliation against adult authority figures, as had been asserted by some psychoanalytically oriented clinicians, was not in evidence. On the contrary, all of the children made some attempt to communicate with the clinicians--the vocalization group on the level of gross manipulations or gesture, and the talking group with whatever words they had available.

In the absence of oral communication, the clinicians sought special means for increasing interaction. Gains were made through joining the children on the floor in order to communicate the clinicians' willingness to participate with them at their primitive level of functioning. A few of the boys responded to rough and tumble activities. So that the children could be encouraged to initiate physical contact, the clinicians wore washable clothing and tried as much as possible to divest themselves of society's prescribed attitudes towards nasal, oral, anal, urethral, and vaginal excretions. Whenever the children sought affection, the clinicians were profusely responsive. If a child chose to be mothered and cuddled for an entire session, this was acceptable. Affection became the essential vehicle for the communication of acceptance.

The clinicians felt comfortable in allowing the children to explore and manipulate their bodies. This was viewed as a way of encouraging the child in the process of self discovery, in discriminating and identifying his own uniqueness, and as a way of furthering the development of his own body image. Several of the children became involved in the infantile pastime of exploring the facial features of the clinicians, trying to probe their fingers into all accessible body orifices.

In an attempt to further the children's feeling of security they were not allowed to physically harm themselves or the clinicians. Limits were imposed on an individual basis. However, the children often inadvertently caused the clinicians considerable bodily discomfort. Several children flung themselves against the clinicians with such carefree abandon that it required careful and agile defense to prevent injury. No malicious intent was manifest, only a lack of comprehension of: (a) the clinicians' verbalizations regarding limits, (b) the child's physical power, (c) the degree of discomfort caused. (Over the six month period, the male clinician sustained the only injury of consequence--a broken hand). Their lack of empathy also appeared to be related to their own deficiency in the perception of pain. The case histories were replete with examples of self-inflicted and accidental blows, bruises, and bloody wounds which often were not accompanied by appropriate behavior suggesting that the children were fundamentally impaired in their ability to understand the source of their discomfort, integrate its implications, or relate it to other experiences.

It was found that any quick or sudden movements elicited untoward reactions in the children. When it was necessary to dress them or physically manipulate them, the clinicians took special care to move slowly, deliberately telegraphing their movements and being as gentle and relaxed as possible.

Another fruitful mode of expressing the clinicians' acceptance of the children was through parallel imitations of their stereotypic movements and vocal productions. For some, imitation took on the character of a game which proved to be especially effective in furthering the development of the relationship as it served to communicate the clinicians' positive regard for the child and for his productions.

Although nonverbal modes became the focal point of contact, and expectations for responses to verbal language stimuli were markedly reduced, some form of vocal stimulus was sustained to inform and reassure the child of the clinicians' accessibility. The overall lessening of demands for language comprehension was followed by a significant modification in the children's behavior. An increase of affective contact with the clinicians occurred. It had been presumed, initially, that once contact was established through such nonverbal means, imitation and identification would follow and eventuate in the unfolding of normal communicative processes and relatedness; however, the children's communicative behavior did not change significantly despite the quality of the relationship formed at the preverbal level.

While small increments in relatedness were gained, they were not maintained from session to session nor were they transferred to other persons outside of therapy. The children's ability to tolerate the slightest change in either their daily routine or their general health and physical status was reflected in vacillatory behavior during therapy sessions. No week passed without some minor or major upheaval in the children's daily pattern of living. While the institutional staff was committed to providing a highly ordered environment, it was not feasible to maintain a permanent and stable staff and patient population. Changes in daily activity schedules, medications, play groups, and roommates were not uncommon. When these environmental changes occurred, the children's life long and insatiable need for sameness and order was patently manifest in fragmented behavior especially evident at the outset of therapy session.

Despite the uncluttered and essentially bland environment of the therapy room, expressions of overwhelming frustration were repeatedly exhibited in the early months of therapy. Though only selected play materials were made available in each session, many of the children found themselves confronted with materials which they could not manage. Their inability to precisely indicate their needs verbally, by gesture, or manipulation gave rise to expressions of further frustration. Outbursts of rage, panic, and flights into the security of ritualistic patterns occurred commonly as a principal means of dealing with what appeared to be a cognitively incomprehensible world for them.

That these children displayed such intense reactions to their environment was antithetic to the concept of an autistic withdrawal. As extended observations of the children were accumulated, it became possible to identify specific sources of their satisfactions and distress which then allowed the clinicians to minimize or dissipate the anguish displayed by the child. When the child was permitted to pursue his stereotypic mode of conduct, entire sessions were lost to rocking and/or other forms of survival behavior, but when the clinicians actively intervened and structured the situation so that the child was encouraged to do that which the clinician had ascertained was within his capacity, the child could be restored to relative calm.

By the end of the second month of therapy the clinicians became increasingly aware of the meaning of the subtle aspects of each child's behavior which made it possible to prevent these paroxysmal outbursts from occurring. Not only could they be anticipated through observing the precursive signs, but they could be prevented with a high degree of certainty. For some of the children the beginning of many sessions was spent at the edge of cataclysmic storms, but as the session progressed the clinicians were usually able to find a framework within which the child could succeed. This was, in essence, the same approach that speech pathologists might use in aphasia therapeutics by preventing catastrophic reactions and facilitating shifts from perseverative behaviors.

Having gained a general estimate of each child's limitations and capacities, it was then possible for the clinicians to maintain a relationship with the children by guiding them into activities which they could manage with a minimum of frustration. As sessions became freer of disquieting outbursts and with the growing recognition of the significance of their lack of language comprehension, the overall level of comfort experienced by the children increased, thus allowing them to display more fully the nature of their disturbances and providing the clinicians with opportunities to introduce assessment activities. Most of the subtler discriminations of the children's speech/language functioning were made during these latter months, together with the acquisition of data on their sensory and perceptual functioning. Watching the children's absorption in various activities over the extended period of time provided verification or refutation of the clinical judgments made in the first weeks of therapy. This period, therefore, could be described as one of "diagnostic therapeutics."

Apart from two children whose parents withdrew them abruptly from the institution prior to the planned final session, the remainder were terminated gradually by diminishing the frequency of sessions.

Additional Discussion

Reliability of observations.--It was expected that changes in behavior would be demonstrated by an analysis of individual ratings obtained using monthly transcriptions of the thirty minute observational protocols. Comparisons between the children were not planned because of their tremendous individuality. Achievement of an accurate portrayal of the individual child's status was obtained when four judges collectively read the three ten minute segments of each observation while listening to the tape recordings and simultaneously rated until they reached a consensus. Correspondence between the ratings and the clinicians' anecdotal accounts of the child's functioning and status were apparent.

The reader will find the Rating Scales in their entirety in Appendix C, followed by the individual ratings for the thirteen children studied.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Purpose of the Study

This study was designed and executed to provide a detailed description of the speech behavior and language comprehension of thirteen institutionalized children, ages four years, six months to thirteen years, ten months who had been diagnosed as autistic, atypical, and/or childhood schizophrenic.

Scope of the Study

The research herein represents a three year investigation of the speech and language behavior of the thirteen children mentioned above. An exhaustive collection of data pertaining to each child's previous and present developmental history and level of functioning was made. Medical, psychological, educational, and institutional informants served as central sources of written data.

Through an examination of all present institutional records, the following dimensions of the child's functioning during his residency were summarized: activities of daily living, motor performance, linguistic functioning, behavioral characteristics, interpersonal relationships, health, and physical status.

As non-participant observers, the investigator and his co-workers plus consultants conducted a total of two years of observation of each child's behavior with emphasis on linguistic functioning. Initially, the first eight months were spent primarily in exploratory activities followed by ten months in which tape recordings of vocal output were gathered continuously in every setting of the children's institutional milieu.

Next, controlled observations were conducted to evaluate each child's linguistic functioning (expressive and receptive) during a program of experimental relationship therapy which was based on the rationale of the child-centered play therapists. The children were seen individually for an average of sixty-five half-hour sessions over a period of six months. Continuous tape recordings of all sessions were gathered. Viewed through a one-way vision mirror a running account of the child's behavior in therapy was dictated by a non-participant observer monthly. With the addition of the clinicians' anecdotal accounts of each session, a comprehensive record of the therapy process was gathered.

Six rating scales were developed for observing the children's behavior as related to the domains of: (1) motility, (2) behavior directed towards self, (3) behavior directed towards inanimate objects, (4) behavior directed towards clinician, (5) mode of communication, (6) affective expression. There was a high correlation of judgments among four observers.

The data were gathered and analyzed in the form of comprehensive case studies. While focus was on the individual case study, the two girls and eleven boys studied herein have also been discussed in an analysis of group trends.

Summary of Findings

1. This study has resulted in the completion of extensively detailed case studies of thirteen children diagnosed as autistic, atypical, and/or childhood schizophrenic. It is believed that these reports constitute a compilation of the most detailed case studies of such children to be found in the available literature. These studies constitute the main contribution of this research effort.

2. This group of children revealed a high incidence of first born males of Jewish parents and of relatively high socioeconomic status. The observations correspond to findings of previous studies.

3. Severe family disorganization had occurred in seven of the twelve families. This relatively high percentage does not correlate with typical findings in other studies.[1,2]

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[1] Kanner, "Problems of Nosology and Psychodynamics of Early Infantile Autism," p. 421.

[2] Rimland, op. cit., pp. 25-27.

4. The diagnoses applied to these children prior to their entrance into the institution covered a wide range nosologically.

5. In the great majority of the children's birth histories and in later diagnostic studies, numerous atypical medical signs were present. For example, eight of the children showed central nervous system pathology. Although their importance in relation to subsequent deviant behavior was unclear, their existence suggested substantially that broad inferences of solely psychogenic etiology in these instances should be offered guardedly.

6. There was a markedly significant correspondence between reports of behavior of these children during the entire period of study reported and those reports made by workers who had assessed these children five to ten years previously. Particularly noteworthy was the minimal amount of behavioral change which had transpired over the years. Stereotypic patterns of behavior were present irrespective of the environment or quality of interpersonal relations.

7. Commonly observed in the majority of these children's histories were the following: (1) indifference, overall unresponsiveness, and inaccessibility, (2) lack in speech behavior, (3) stereotyped, ritualistic behaviors, (4) hyperkinetic behavior, (5) eating and sleeping problems.

Speech and Language Behavior

The detailed clinical observations of speech behavior and language comprehension supported by analyses of tape recordings were strongly suggestive of central nervous system dysfunction. Impairment of conceptual as well as perceptual functioning was apparent.

A clear differentiation of the children into two groups on the basis of their speech and language behavior was possible. Eight children did not produce any comprehensible vocal sounds even remotely approximative of speech. Designated the vocalization group, they also revealed more severe limitations in all other areas of development.

Five children, the talking group, produced speech albeit severely limited and of minimal communicative value. Their speech consisted primarily of echolalia, both immediate and delayed. Appropriate communicative verbalizations were rare and invariably agrammatic.

Both groups displayed deficiencies in the use of their oral and respiratory structures, and in general motor behavior.

A preference for proximal sensory experience (olfactory, gustatory, and tactile) over the use of distal receptors (auditory and visual) was noted.

While both groups gave evidence of normal levels of hearing and visual acuity, they revealed extensive auditory and visual perceptual disorganization.

Receptive functioning.--With different degrees of severity all of the children were seriously impaired in language comprehension. The four youngest children in the vocalization group were significantly unresponsive to nonverbal and verbal stimuli. The four older children in this group and the entire talking group gave conditioned responses to certain standard forms of address.

The talking group's receptive language functioning was generally limited to auditory memory with minimal or no comprehension. A closed loop phenomenon was observed in which these children seemed to sense and remember verbal stimuli but failed to integrate them with what they already knew.

Observers could be misled into believing that comprehension for spoken language existed for certain children as they did, on occasion, respond appropriately to particular language stimuli. These responses were not related to the symbolic content of what was said but appeared to be evoked by the nonverbal aspects of part or of the whole situation. They seemed to be acquired following repeated presentations of same or similar language stimuli on a primitive conditioned response level.

Expressive functioning.--The listener analysis of the sounds produced by the vocalization group tended to support the impressions of perceptual disorder plus the probability of an impaired system of oral motor behavior. Their vocalizations seemed primarily to be spontaneous, with rapid changes of pitch, intensity, and quality suggestive of lack of precise motor control. Communicative intent was not discernible in their vocalizations, nor was it possible to correlate them with any kind of external affective stimulus. Seemingly, there was only the pleasure gained in tactile-kinesthetic and/or auditory proprioception. The children's phonations were only crude approximations of phonemes of American speech and failed to replicate external speech stimuli. Minimal constrictions of the vocal tract and loose contacts of the articulators were in evidence in their sound productions. Gross physical manipulation was the only behavior distinctly communicative.

The talking group's speech contributed markedly to their overall appearance of bizarreness; it contained unique features which have been reported by others. These included: affirmation by repetition, pronominal reversals, extreme literalness, metaphorical use of language, part-whole confusions, delayed echolalia.[1]

The following characteristics and observations were to be noted:

1. Echolalia, both immediate and delayed, was directly proportional to the child's auditory memory.

2. Reiterations of heard material were viewed as attempts to practise.

3. Many productions were identified as imitations of the auditory background rather than foreground.

4. Evocation of certain verbalizations reflected

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[1] While the above phenomena have been interpreted by most workers as representative of the etiology, the researchers viewed these and other speech/language data as symptomatic of the basic associational deficit present.

the child's conditioning to specific situational stimuli.

5. Immediate echolalia tended to be more precisely articulated and contained approximations of the vocal characteristics of the person being imitated.

6. Delayed echolalia tended to be misarticulated and agrammatic, interfering with the auditor's comprehension.

7. Articulation deviancies reflected an infantile use of the oral musculature which contributed to unintelligibility.

8. Voice variability was significantly deficient in terms of pitch, intensity, rhythm, and quality.

Experimental Relationship Therapy

The relationship therapy phase of the study revealed that it was not that the children were unwilling to relate, but that they related through preverbal modes of communication. The mode of interaction most productive of a communicative relationship was that of using direct bodily contact and gesture. A nondirective or reflective approach was significantly less productive of interaction. In the absence of the clinicians' direct intervention, the children only perpetuated their stereotyped mode of conduct.

In psychotherapeutic efforts with these children it has been presumed that once contact has been established through nonverbal modes, imitation and identification would follow and eventuate in the unfolding of improved communicative processes and relatedness. Integrity of the child's central functioning is inherent in this presumption. When the nature of the language dysfunction is perceived as emanating from organic deficits it must be recognized that the child may be incapable of utilizing standard psychotherapeutic procedures. The children's language deficits persisted irrespective of the kinds of relationship formed in relationship therapy.

Limitations of the Study

The lack of precedence in research design and in speech/language therapy approaches with autistic children required that considerable time be spent in exploratory activities. The nosological confusion regarding these children required further extended observations prior to direct contact with the children studied.

In the experimental therapy phase, difficulties were encountered in controlling natural variables in the institutional life of the children.

The tremendous individuality of the children restricted the possibilities of treating the data gathered in a comparative manner.

Implications for Further Research

1. Although the behavior of the children studied was strongly suggestive of cognitive dysfunction, that it represented central nervous system pathology was not always clear and was rarely confirmed readily by standard neurological examination. The major unresolved question remains: What is the nature of the organic condition in autism?

2. Clarification of autism as a unique syndrome which has professional consensus is of primary importance.

3. Additional longitudinal studies of such children are desirable.

4. A comparative analysis of specific therapeutic and educational methodologies needs to be undertaken.

5. Effects of intensive stimulation through various sensory modalities over various time spans should be studied.

6. Particular attention should be given the consideration of evaluating and training such children through operant conditioning techniques.

APPENDIX A

INQUIRY FORM

Should you wish to expand any of your answers please use the reverse side of any of these pages noting the number of the question with your comment.

Child's Name: ______________________________

	Age	Age at time of child's birth
Mother's Name: ________________	___	____
Father's Name: ________________	___	____

Brothers and Sisters:	Date of Birth
____________________	_____________
____________________	_____________
____________________	_____________
____________________	_____________

Birth Information

Child's Birthplace

Hospital: ____

Address: ____

Attending Physician: ______________________________

Length of pregnancy: _____months Labor: ____hours

Child's birth weight: ________

Nature of delivery: (describe any complications)

____

____

Feeding

1. How was your child fed? Breast: ___ For how long? ___
Bottle: ___ For how long? ___

2 Did your infant experience any difficulty sucking?

Yes ___ No ___ If yes, please describe: ____________

____

3. There has been a great deal of discussion about methods of feeding. Please check the method best describing how you handled this with your child.

___ Complete self demand: child always fed when he/she cried (was hungry). Child permitted to eat as much and as long or as little as he/she wanted at a feeding.

___ Vague attempts at scheduling, but child never wakened for a feeding and fed as much as an hour early if it seemed necessary.

___ Rough schedule which was modified by as much as half an hour if child seemed hungry.

___ Fairly exact schedule which was not modified by more than fifteen minutes.

___ Exact feeding schudule: child fed by the clock. Child wakened for feedings.

4. When was weaning begun: ________ Completed: ________

5. Were there any persistent episodes of:

	Yes	No
a) vomiting	___	___
b) diarrhea	___	___
c) constipation	___	___

6. Did your child:

a) suck his thumb	___	___
b) suck a favorite blanket or toy	___	___

If yes, how long did this persist? ________________

7. Did your child have any difficulty:

	Yes	No
a) drinking from a cup	___	___
b) swallowing	___	___
c) drinking through a straw	___	___

8. At what age did your infant's first tooth appear? _____

Motor Development

9. At what age did your child:

a) sit alone __________
b) walk with support __________
c) stand alone __________
d) walk unassisted __________
e) walk up and down stairs __________

10. Check any of the following toys or play activities which your child enjoyed:

___ rattles
___ squeeze and squeak toys
___ pull toys
___ stuffed animals
___ toy musical instruments
___ clay, play dough or plasticene
___ balls
___ building blocks
___ educational toys requiring their assembly according to size and/or color
___ sand box
___ dolls
___ hobby horse
___ crayons
___ chasing games
___ playground equipment (swings, slides)
___ spinning tops
___ "Peek a boo" games
___ vigorous play)being tossed in the air, etc.)

List any other favorite toys or activities not included above: ______________________________

11. In playing with toys such as a ball, did your child prefer to play:

___ a) independently
___ b) with others

If your child played with others were they:

___ a) adult family members
___ b) brothers and sisters
___ c) children about the same age as this child
___ d) adults other than family members

Speech and Language Development

12. As an infant, did your child use different cries for pain and hunger? Yes ___ No ___

13. Check any of the following terms which describe the early vocal activity of your child:

___ small throaty noises
___ coos
___ gurgles
___ chuckles
___ laughs
___ babbles (repeating syllables, ba-ba-ba-ba, or da-da-da-da)
___ squeals
___ grunts
___ growls
___ other ___________________________

	Yes	No
14. In response to a soothing voice, did crying stop?	___	___
In response to any angry or loud voice, did crying occur?	___	___
In response to loud noises, did crying occur?	___	___

15. When the mother entered the infant's room, did the child begin to babble? Yes ___ No ___

16. Did the infant raise his/her arms to be picked up when mother reached for him/her? Yes ___ No ___

17. Did you ever imitate any of the sounds your child made? Yes ___ No ___

If yes, check child's response:

___ a) child stopped making sound
___ b) child increased his production.
___ c) other ___________________________

18. Did your child talk to or make noises at his toys? Yes ___ No ___

19. Did your child babble combining several vowel sounds (ah-ee, oo-ah)? Yes ___ No ___

20. Did your child babble using "da-da-da" or "ma-ma-ma" in relation to you? Yes ___ No ___

21. Would your child stop his/her activity:

	Yes	No
a) when "no" was used?	___	___
b) when he/she was called by name?	___	___

22. Did your child babble using more complicated but meaningless sounds: Yes ___ No ___

If yes, when:
___ in response to people
___ while playing
___ both

23. Did your child try to imitate sounds? Yes ___ No ___

24. Did your child begin to use words other than "da-da" or "ma-ma"? Yes ___ No ___

25. Did your child wave bye-bye or paddy cake when asked? Yes ___ No ___

26. Did your child say "ta-ta" or its equivalent for thank you? Yes ___ No ___

27. To indicate his/her wants, did your child:

___ a) point
___ b) make sounds
___ c) manipulate your arm or body
___ d) all of the above

28. By ceasing play, looking in the direction of, or going to the source of some noise, did your child show any recognition of the source of the following common sounds:

___ telephone ringing
___ doorbell ringing
___ footsteps
___ whistling
___ barking dog
___ music (radio, television or phonograph)
___ other (please list)

29. Did your child ask for his/her wants by naming the object: (milk, cookie, etc.) Yes ___ No ___

30. Did your child use common expressions such as "all gone"? Yes ___ No ___

31. Did your child combine words to express an idea such as "Daddy go bye-bye"? Yes ___ No ___

32. Did your child use more than three word sentences? Yes ___ No ___

33. Did your child use pronouns (I, me, you) but not always correctly? Yes ___ No ___

34. Would your child give his/her full name when requested? Yes ___ No ___

35. Did your child refer to himself/herself by "I" or "me" in place of his/her name? Yes ___ No ___

36. Did your child know a few rhymes or songs? Yes ___ No ___

37. Could your child count from 1 to 10? Yes ___ No ___

38. Did your child use complex sentences? Yes ___ No ___

39. In your opinion, was there any point at which speech and language development stopped? Yes ___ No ___

If yes: a) at what age? ___________
b) at what stage of development:
___ child started babbling but stopped
___ child started using words but stopped
___ child used sentences but stopped

40. Do you feel that your child generally understood when you talked to him/her? Yes ___ No ___

41. Please list any physicians, specialists, clinics, hospitals or institutions with whom you had any contact regarding your child. If other than a private physician, please provide the names of the physicians or persons contacted at hospitals, clinics, etc.

Name: ______________________________ Date: __________

Address: ____

Your address at the time of this contact: _______________

____

APPENDIX B

REPRESENTATIVE PLAY MATERIALS USED IN EXPERIMENTAL THERAPY

Thin-skinned balloons
Bubble blowing solution, wands, and pipes
Toy flutes
Whistles

Sand
Water
Sponges
Scraps of cloth of various textures
Plasticene
Squeeze and squeak toys

Pacifiers
Nursing bottles and nipples

Stuffed animals
Dolls
Assorted animal hand puppets
Family group of rubber figurines
Family group of rubber hand puppets

Crayons
Paper
Finger paints

Various sized balls
Wooden construction blocks
Miniature farm animals
Plastic military figurines
Miniature cars and trucks

Four foot plastic clown--"Puncho"
Musical jack in the box
Shoe lace trainer
Assorted lengths of wooden and plastic sticks
Silverware and dishes
Erector set

APPENDIX C

RATING SCALES

I. Motility: the quality of physical movements ranging from organized, goal directed, reality oriented movements to disorganized, autoerotic, fragmented, and bizarre movements.

Rating	
6	Economy and efficiency of movement involved in goal directed, reality oriented activity. May include purposeful exploratory activity. Organized--not fragmented.
5	Less economy of movement and less organization present than in 6. The goal is apparent and reality oriented. Less purposeful exploratory activity.
4	Movements are at a low level of organization and show little economy. The goal is vague and obscure. May be exploratory activity present but random in nature.
3	Aimless activity. Goals are exclusively introcentric--not reality oriented. Movements are not explosive but are fragmented and disorganized. Movements may assume habitual patterning.
2	Hyperactivity. Fragmented and disorganized.

Rating

Explosive, volatile movements present which may include sudden involuntary contortions. The goal may be erotic in nature.

1 Hypomotility. Child remains in one place. Only movements present may be habitual manipulation through rocking, etc. Erotic goals are the focus.

II. Behavior Directed Toward Self: the quality of involvement with the self in relation to the external environment ranging from the utilization of the external environment in relevant, meaningful ways to complete absorption with the self and erotic needs.

Rating

6 The recognition of the intrinsic value of persons, persons and objects, and the self, demonstrated by relevant, meaningful behavior.

5 Utilization of objects and possibly persons with the recognition that the objects can provide satisfaction because of their own intrinsic value.

4 Minimal recognition of the external environment is seen by the utilization of persons, persons and objects, for bodily pleasure or autoerotic activity, but with no recognition of their intrinsic value.

3 Self is of primary focus. Objects are utilized for autoerotic activity.

2 Primary orientation to body parts and/or products

Rating

through oral, tactile, olfactory stimulation by habitual manipulation. Exclusion of persons and objects.

1 Primary orientation to body parts and/or products (urine, feces, saliva, mucous, etc). Self-induced pain--intrapunitive behavior such as head banging, etc. Exclusion of persons and objects.

III. Behavior Directed Toward Inanimate Objects: the quality of involvement with inanimate objects ranging from active, meaningful utilization to rejection.

Rating

6 Relevant, purposeful use of object. Toys used in such a way as to demonstrate the child's awareness of their potentials in socially meaningful constructions. Discrimination and selectivity present. A sustained effort is exhibited.

5 Objects are used actively and purposefully but constructions demonstrate a lack of efficiency in organizational ability. Animation potential, if present, is reality oriented.

4 Exploratory contact with object. Curiosity about the intrinsic use or value of the object or toy may be demonstrated. Attempts at animation, if present, are distortions of reality. No meaningful constructions are made.

Rating

3 Contact with objects is of a compulsive, repetitive, perseverative nature. Curiosity and meaningful constructions are absent.

2 Superficial, indiscriminate touching or dropping of objects. Manipulation of objects is essentially oral, tactile, olfactory.

1 Complete apathy or rejection marked by avoidance or destruction of object. Child may contact object by falling, tripping, stepping on or bumping into object accidentally.

IV. Behavior Directed Toward Clinician: the quality of the child's attempts to involve himself with, communicate with, and/or become overtly aware of the clinician as an animate, personalized being, capable of responding physically and/or verbally to the child's overtures.

Rating

6 Relevant, purposeful behavior directed toward or in response to the clinician. An active, developmental relationship is in process.

5 Behavior demonstrates awareness of clinician. Relationship has lapses and inconsistencies, but child initiates some contact. Responses to contact and communicative effort tend to be egocentric and less positive in nature than in 6.

4 Child initiates contact showing awareness of the

Rating

clinician as a person, but egocentric needs dominate. Responses to the clinician are limited and/or negative.

3 Child initiates moderate contact but it is marked by depersonalization and is for purely introcentric needs. Child does not respond to contact or communicative effort initiated by the clinician.

2 Contacts are superficial and fleeting--either visually or tactually. Distance is maintained. Physical contacts are only momentary and may include overt rejection marked by depersonalization.

1 Social detachment. Child does not initiate or respond to effort at contact.

V. Mode of Communicative Expression: the effectiveness of expressed communicative effort for human interaction.

Rating

6 Appropriate and spontaneous social verbal expression.

5 Relevant social verbalizations. May be disgrammatic or misarticulated.

4 Relevant or delayed echolalia or immediate echolalic reproductions. May include relevant use of gesture accompanied by some communicative effort through added verbalization, relevant to the immediate situation.

3 Primarily incomprehensible, spontaneous utterances such as delayed echolalia or jargon. Relevant use

Rating

of gesture may be present.

2 Gross manipulations of clinician. Vocalizations are either absent or primitive such as crying and whining.

1 No observable expressive effort. Vocalizations, if present, are autoerotic. Involuntary expression through body language (somatic changes).

VI. Affective Expression: the quality of expressed emotion ranging from affect which is appropriately expressed in relation to external situation to an absence of affect.

Rating

6 Affect expressed appropriately related to an external social stimulus.

5 Affect which can be related to an external stimulus. Less appropriate in extremes of intensity or duration than 6.

4 Volatile, labile expression of uncontrolled, unrealistic intensity for essentially external stimulus.

3 Moderate expression of affect to stimulus which appears to be self generated.

2 Volatile, labile expression of affect which cannot be related to external stimulus. Seems to be a self generated process.

1 No observable manifestation of anger or pleasure. Blank, mask-like expression or volatile, explosive expression of uncontrolled intensity--self generated process.

TIMOTHY: INITIAL AND MONTHLY RATINGS ON SIX DIMENSIONS OF RELATEDNESS

Session / Scale	Ratings[a,b]						
	1st	13th	25th	36th	47th	60th	68th
I Motility	2 2 2	2 2 2	3 3 3	3 3 3	2 2 2	3 3 3	3 3 3
II Behavior towards self	3 3 3	4 3 4	4 3 3	3 3 3	3 3 3	3 3 3	3 3 3
III Behavior towards inanimate objects	2 2 2	2 2 2	2 2 2	2 2 2	2 2 2	2 2 2	2 2 2
IV Behavior towards clinician	2 2 2	3 3 3	3 4 4	4 2 2	2 2 2	3 3 3	3 4 4
V Mode of communication	1 1 1	2 2 2	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1
VI Affective expression	2 2 2	4 3 3	3 3 3	3 3 3	3 3 3	3 3 3	3 3 3

[a] Scores represent agreement of the four raters for each ten minutes of observed period.

[b] For significance of numerical ratings refer to description of Rating Scales (pp. A8 - A13).

DEBRA: INITIAL AND MONTHLY RATINGS ON SIX DIMENSIONS OF RELATEDNESS

Session / Scale	Ratings[a,b]						
	1st	12th	25th	35th	47th	60th	68th
I Motility	3 1 1	3 3 3	3 3 3	3 3 3	3 3 3	1 3 3	3 3 3
II Behavior towards self	2 2 2	2 1 2	2 2 2	2 2 2	2 2 2	2 2 2	2 2 2
III Behavior towards inanimate objects	2 1 1	2 2 2	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1
IV Behavior towards clinician	2 2 2	2 2 2	2 3 3	3 3 3	3 3 3	3 3 3	3 3 3
V Mode of communication	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1
VI Affective expression	1 2 2	2 2 2	3 3 3	3 3 3	1 1 1	1 1 1	1 1 1

[a] Scores represent agreement of the four raters for each ten minutes of observed period.

[b] For significance of numerical ratings refer to description of Rating Scales (pp. A8 - A13).

GLEN: INITIAL AND MONTHLY RATINGS ON SIX DIMENSIONS OF RELATEDNESS

Session / Scale	Ratings[a,b]					
	1st	12th	24th	35th	44th[c]	
I Motility	2 2 2	2 2 2	2 2 2	2 2 2	2 2 2	
II Behavior towards self	4 4 4	3 4 4	3 3 3	3 3 3	3 3 3	
III Behavior towards inanimate objects	2 2 2	2 2 2	2 2 2	2 2 2	2 2 2	
IV Behavior towards clinician	3 3 3	2 3 3	2 3 3	2 2 2	2 2 2	
V Mode of communication	1 1 1	2 2 2	1 2 2	1 1 1	2 2 2	
VI Affective expression	2 2 2	1 2 2	2 2 2	1 1 1	2 2 2	

[a] Scores represent agreement of the four raters for each ten minutes of observed period.

[b] For significance of numerical ratings refer to descriptions of Rating Scales (pp. A8 - A13).

[c] Subject withdrawn from project.

RONALD: INITIAL AND MONTHLY RATINGS ON SIX DIMENSIONS OF RELATEDNESS

Session / Scale	Ratings[a,b]						
	1st	11th	22nd	33rd	43rd	54th	63rd
I Motility	2 2 2	3 3 3	3 4 4	4 3 3	2 2 2	3 3 3	2 3 3
II Behavior towards self	3 3 5	3 3 3	3 3 3	3 3 3	3 3 3	3 4 4	3 3 3
III Behavior towards inanimate objects	2 2 3	2 3 3	2 3 3	3 3 3	3 3 3	3 3 3	3 3 3
IV Behavior towards clinician	1 2 4	2 2 2	2 2 2	2 2 2	2 2 2	3 3 3	3 3 3
V Mode of communication	1 2 2	1 1 1	1 1 1	1 1 1	1 1 1	1 3 3	1 1 1
VI Affective expression	1 1 3	3 3 3	3 3 3	3 3 3	3 3 3	2 2 2	2 3 3

[a] Scores represent agreement of the four raters for each ten minutes of observed period.

[b] For significance of numerical ratings refer to description of Rating Scales (pp. A8 - A13).

JOE: INITIAL AND MONTHLY RATINGS ON SIX DIMENSIONS OF RELATEDNESS

Session / Scale	Ratings[a,b]						
	1st	12th	25th	35th	46th	58th	67th
I Motility	3 3 3	4 4 4	4 4 4	3 3 4	4 4 3	4 4 4	4 4 4
II Behavior towards self	3 3 3	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4
III Behavior towards inanimate objects	2 2 2	3 3 3	3 4 4	2 2 3	3 3 3	3 3 3	3 3 3
IV Behavior towards clinician	1 2 1	4 4 2	4 4 4	4 4 4	4 4 3	4 4 4	4 4 4
V Mode of communication	1 2 2	3 3 3	3 3 3	3 3 3	3 3 3	3 3 3	3 3 3
VI Affective expression	2 2 2	2 2 2	4 4 4	3 5 5	4 3 3	4 4 4	5 5 5

[a] Scores represent agreement of the four raters for each ten minutes of observed period.

[b] For significance of numerical ratings refer to description of Rating Scales (pp. A8 - A13).

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JOEL: INITIAL AND MONTHLY RATINGS ON SIX DIMENSIONS OF RELATEDNESS

Session	Ratings[a,b]						
Scale	1st	10th	20th	28th	38th	51st	60th
I Motility	2 2 2	2 2 2	2 2 2	2 2 2	2 2 2	1 1 1	1 2 1
II Behavior towards self	3 2 1	3 3 3	3 3 3	3 3 3	3 3 3	3 3 3	3 3 3
III Behavior towards inanimate objects	2 1 2	2 1 1	2 2 2	2 2 2	2 2 2	2 2 2	2 2 2
IV Behavior towards clinician	1 1 1	2 1 2	1 1 2	2 2 2	1 2 2	1 2 2	2 2 2
V Mode of communication	1 2 1	1 1 2	1 2 2	2 1 1	2 2 2	1 1 2	2 1 1
VI Affective expression	1 1 1	1 2 1	2 1 1	2 2 1	2 1 2	2 2 2	2 2 2

[a] Scores represent agreement of the four raters for each ten minutes of observed period.

[b] For significance of numerical ratings refer to description of Rating Scales (pp. A8 - A13).

GENE: INITIAL AND MONTHLY RATINGS ON SIX DIMENSIONS OF RELATEDNESS

Session / Scale	Ratings[a,b]						
	1st[c]	10th	21st	29th	38th	50th	57th
I Motility	2 - -	3 3 3	2 2 2	2 2 2	2 2 2	2 2 2	2 2 2
II Behavior towards self	1 - -	3 5 3	4 4 4	4 4 4	4 4 4	3 3 3	3 3 3
III Behavior towards inanimate objects	2 - -	2 2 2	2 2 2	2 2 2	2 2 2	2 2 2	1 2 1
IV Behavior towards clinician	1 - -	1 1 1	3 3 3	3 3 3	3 3 3	2 2 2	2 3 2
V Mode of communication	2 - -	1 1 1	2 2 2	2 2 2	2 2 2	2 1 2	2 2 1
VI Affective expression	2 - -	2 2 2	2 2 2	2 2 2	2 2 2	2 1 2	2 1 2

[a] Scores represent agreement of the four raters for each ten minutes of observed period.

[b] For significance of numerical ratings refer to descriptions of Rating Scales (pp. A8 - A13).

[c] Subject left after the first ten minutes.

GEORGE: INITIAL AND MONTHLY RATINGS ON SIX DIMENSIONS OF RELATEDNESS

Session / Scale	Ratings[a,b]						
	1st	10th	20th	31st	42nd	55th	63rd
I Motility	3 3 3	4 4 4	5 5 5	4 5 5	2 2 2	4 5 5	4 4 4
II Behavior towards self	3 3 3	4 4 4	5 5 5	4 5 5	4 4 4	4 5 5	4 4 4
III Behavior towards inanimate objects	2 3 3	3 3 3	6 6 6	5 3 3	2 2 2	4 5 5	3 3 3
IV Behavior towards clinician	2 2 2	5 5 5	5 5 5	5 6 6	4 4 4	4 6 6	4 4 4
V Mode of communication	1 1 1	2 2 2	2 2 2	2 2 2	2 2 2	2 2 2	2 2 2
VI Affective expression	3 3 3	5 5 5	5 5 5	4 5 5	2 2 2	4 5 5	5 5 5

[a] Scores represent agreement of the four raters for each ten minutes of observed period.

[b] For significance of numerical ratings refer to description of Rating Scales (pp. A8 - A13).

DENNIS: INITIAL AND MONTHLY RATINGS ON SIX DIMENSIONS OF RELATEDNESS

Session	Ratings[a,b]						
Scale	1st	9th	25th	35th	47th	60th	68th
I Motility	4 4 4	5 4 4	4 5 4	6 6 5	4 5 5	5 5 5	5 5 5
II Behavior towards self	4 4 4	5 5 5	4 5 5	5 5 5	4 5 5	5 5 5	5 5 5
III Behavior towards inanimate objects	3 3 3	3 4 4	3 5 4	5 5 5	3 5 5	5 5 5	5 5 5
IV Behavior towards clinician	4 4 4	5 5 5	4 5 4	5 5 5	3 5 5	5 5 5	5 5 5
V Mode of communication	4 4 4	4 4 4	4 4 4	4 4 4	3 4 4	4 4 4	4 4 4
VI Affective expression	4 4 4	5 5 5	4 4 4	5 4 2	2 3 5	5 5 5	5 5 5

[a] Scores represent agreement of the four raters for each ten minutes of observed period.

[b] For significance of numerical ratings refer to description of Rating Scales (pp. A8 - A13).

PETER: INITIAL AND MONTHLY RATINGS ON SIX DIMENSIONS OF RELATEDNESS

Session Scale	Ratings[a,b]						
	1st	13th	28th	39th	47th	58th[c]	
I Motility	4 4 4	5 5 5	3 5 5	5 5 4	5 5 5	3 1 1	
II Behavior towards self	4 4 4	5 5 5	3 5 5	5 5 5	5 5 5	2 2 2	
III Behavior towards inanimate objects	4 4 4	5 5 5	4 5 5	5 5 5	5 5 5	1 1 1	
IV Behavior towards clinician	3 3 3	4 4 4	4 5 3	5 5 5	5 6 5	2 2 2	
V Mode of communication	3 3 3	3 3 3	4 1 1	4 4 4	4 4 4	3 2 2	
VI Affective expression	3 3 3	5 5 5	5 5 5	4 5 5	5 5 5	2 1 1	

[a] Scores represent agreement of the four raters for each ten minutes of observed period.

[b] For significance of numerical ratings refer to description of Rating Scales (pp. A8- A13).

[c] Subject withdrawn from project.

JONATHAN: INITIAL AND MONTHLY RATINGS ON SIX DIMENSIONS OF RELATEDNESS

Session	Ratings[a,b]						
Scale	1st	13th	28th	39th	50th	62nd	70th
I Motility	2 2 2	4 3 3	4 3 2	4 3 3	4 3 3	4 4 4	4 4 4
II Behavior towards self	3 3 3	4 4 4	4 4 3	3 3 3	4 4 4	4 4 4	4 4 4
III Behavior towards inanimate objects	3 3 3	3 3 3	3 3 2	3 3 3	3 3 3	3 3 3	3 3 3
IV Behavior towards clinician	1 1 1	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4
V Mode of communication	1 1 1	3 3 3	3 3 3	3 3 3	3 3 3	4 4 4	4 4 4
VI Affective expression	2 2 2	4 4 4	3 3 3	4 4 4	4 4 4	4 4 4	4 4 4

[a] Scores represent agreement of the four raters for each ten minutes of observed period.

[b] For significance of numerical ratings refer to description of Rating Scales (pp. A8 - A13).

SCOTT: INITIAL AND MONTHLY RATINGS ON SIX DIMENSIONS OF RELATEDNESS

Session / Scale	Ratings[a,b]						
	1st	12th	26th	37th	48th	61st	69th
I Motility	2 2 2	2 2 2	2 2 2	5 2 2	2 2 2	5 5 5	5 5 5
II Behavior towards self	3 3 3	5 5 5	4 4 4	5 4 4	4 4 4	5 5 5	5 5 5
III Behavior towards inanimate objects	3 3 3	5 5 5	3 3 3	5 4 3	3 3 3	5 5 5	5 5 5
IV Behavior towards clinician	4 4 4	4 4 4	4 4 4	5 4 4	4 4 4	5 5 5	5 5 5
V Mode of communication	3 3 3	4 4 4	3 3 3	4 3 3	3 3 4	4 4 4	4 4 4
VI Affective expression	2 2 2	2 2 2	2 2 2	2 2 2	2 2 2	3 3 3	3 3 3

[a] Scores represent agreement of the four raters for each ten minutes of observed period.

[b] For significance of numerical ratings refer to description of Rating Scales (pp. A8 - A13).

SANDY: INITIAL AND MONTHLY RATINGS ON SIX DIMENSIONS OF RELATEDNESS

Session Scale	Ratings[a,b]						
	1st	11th	23rd	34th	44th	57th	65th
I Motility	3 3 3	4 4 4	3 3 3	3 3 4	4 4 4	5 5 5	4 4 4
II Behavior towards self	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4	5 5 5	4 4 4
III Behavior towards inanimate objects	3 3 3	4 4 4	4 4 4	4 4 4	5 4 4	3 3 3	3 3 3
IV Behavior towards clinician	3 3 3	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4
V Mode of communication	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4
VI Affective expression	4 4 4	3 3 3	3 3 3	4 4 4	5 5 5	5 5 5	5 5 5

[a] Scores represent agreement of the four raters for each ten minutes of observed period.

[b] For significance of numerical ratings refer to description of Rating Scales (pp. A8 - A13).

APPENDIX IV

CASE HISTORY OUTLINE

I. Family History

- A. Parents
  1. Ages at the time of child's birth
  2. Ethnic, religious, educational, and social background
  3. Available psychiatric and/or social workers' reports

- B. Siblings
  1. Birth order
  2. Unusual medical or psychiatric status

II. Birth Record

- A. Mother
  1. Prenatal course
  2. Length of gestation
  3. Duration of labor
  4. Nature of delivery
  5. Anesthetic(s)
  6. Postpartum course

- B. Infant
  1. Weight and condition at birth
  2. Neonatal course
  3. Age and weight upon discharge from hospital

III. Infancy (First-Second Years)

- A. Feeding
  1. Breast or bottle
  2. Schedule versus self demand
  3. Age when weaned
  4. Problems reported

- B. Eruption of first tooth

- C. Motor development

- D. Early auditory behavior

- E. Prelinguistic and linguistic behavior
- F. Social development
- G. Reports of professional consultations, evaluations, and diagnoses, etc.

IV. Third and subsequent years

- A. Further developmental history
- B. Medical reports
- C. Therapy and/or educational experiences

V. Admission to Seaview

- A. Age of child at time of admission
- B. A review of the child's general status with regard to activities of daily living as reported by the child's family
- C. Any admission notes made by the consulting psychiatrist or the administrative personnel

VI. Residency at Seaview

- A. A continuation of any medical and/or psychiatric reports through to the termination of experimental therapy
- B. Activities of daily living
  - 1. Eating
  - 2. Sleeping
  - 3. Toileting
  - 4. Dressing
- C. Motor behavior
  - 1. Gait
  - 2. Gross and fine motor control
  - 3. Use of play yard equipment
  - 4. Stereotypic patterns of bodily movements
- D. Linguistic functioning
  - 1. Expressive
    - a. Pitch
    - b. Volume
    - c. Articulation
    - d. Vocabulary
  - 2. Principal mode of communication

- E. Asocial Behavior
    - 1. Stereotyped, bizarre, repetitive, idiosyncratic
    - 2. Evidence of pica
    - 3. Tics or habitual manipulations
- F. Response to Frustration
- G. Response to Environmental Change
    - 1. Child's need for sameness
- H. Response to Children
- I. Response to Adults
- J. Health and Physical Status
    - 1. Accidents and illnesses
    - 2. Psychopharmacology
    - 3. Height and weight prior to experimental therapy

VII. Experimental Therapy

- A. Introduction
    - 1. Child's age, appearance, and most characteristic behavioral patterns
    - 2. Assignment to male or female clinician
    - 3. Number of sessions
    - 4. Drugs used during therapy
- B. Detailed account of initial session
- C. Monthly account of therapy process
    - 1. Child-clinician interactions
    - 2. Use of play materials
    - 3. Samples of speech or vocal behavior
    - 4. Receptive language functioning
    - 5. Behavioral description

VIII. Case Summary

- A. Medical history
- B. Previous therapy and educational experience
- C. Residency at Seaview
- D. Experimental Therapy
    - 1. Nature of the relationship
    - 2. Perceptual Processes
        - a. Olfactory
        - b. Gustatory
        - c. Tactile-kinesthetic
        - d. Response to pain
        - e. Visual
        - f. Auditory

3. Motor Behavior
    a. Vestibular Functioning
4. Linguistic Behavior
    a. Receptive
    b. Expressive
5. Time and Spatial Orientation
6. Reaction Time
7. Learning
    a. Attention
    b. Imitation
    c. Memory
    d. Problem solving

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